

Municipal Journal

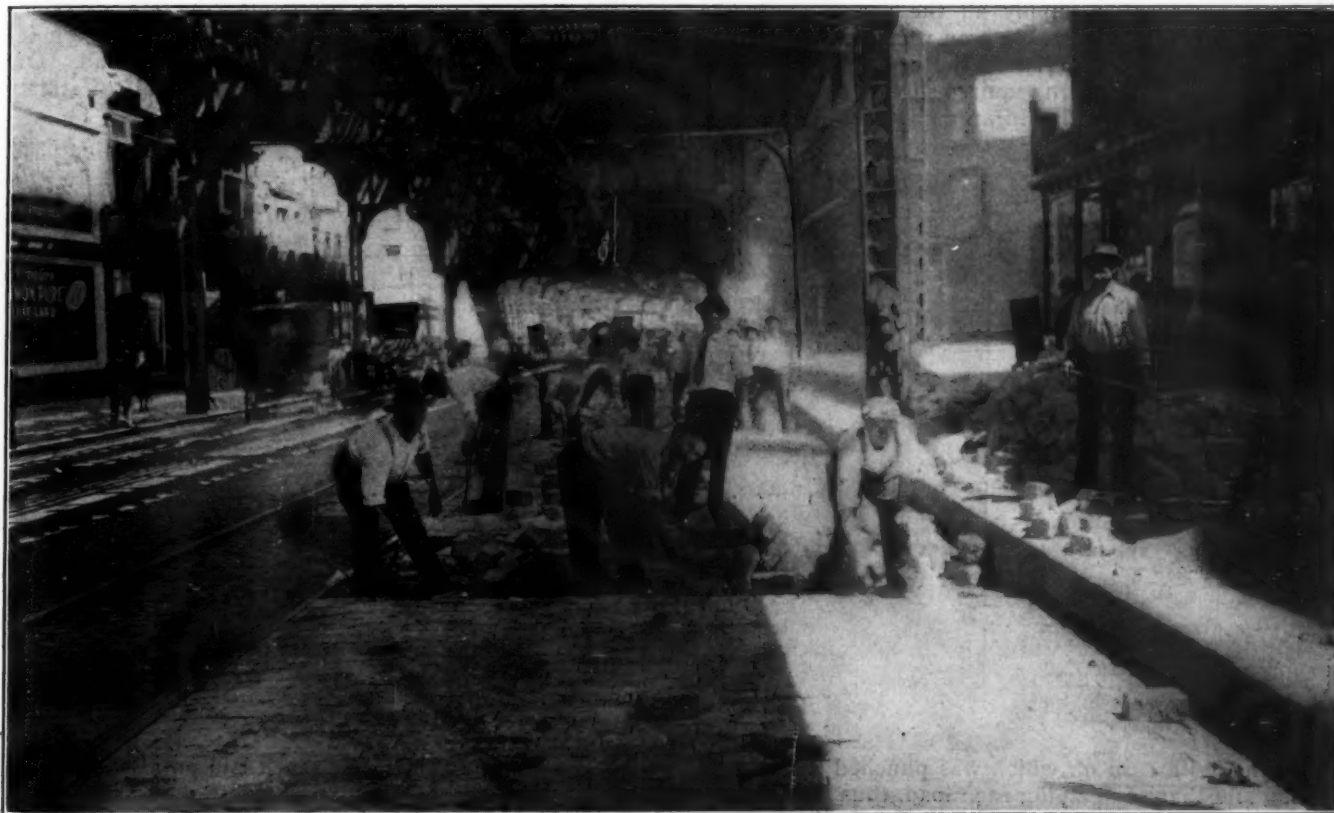
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No. 26

DIFFICULT PAVEMENT CONSTRUCTION IN BROOKLYN

On a Street Carrying Heavy Street-Railway and Roadway Traffic—Ripping up Old Wood Blocks and Concrete Base by Means of a Steam Grading Shovel—Using Sand-Tar Joint Filler.



LAYING STONE BLOCK ON BROADWAY, BROOKLYN.

Restricted space, heavy traffic on the street and on a double-track street car line (where the car traffic averages 90 cars an hour and reaches a mark of 120 during the rush hours), and an elevated railway structure are a few of the difficulties encountered in laying a new granite block pavement on Broadway, Brooklyn. Some new and interesting methods and equipment were employed by the contractors, the Charles A. Myers Contracting Company, and by the paving sub-contractor, Fred Hesse.

The job consists of removing 34,464 square yards of wood block pavement, tearing up the old 5-inch concrete foundation and replacing it with a 6-inch concrete base upon which is being laid an improved granite block pavement. The old base was in good shape, despite numerous cuts made in it, but was too high to use with the new pavement without changing the elevation of the street surface, and therefore had to be removed, together with 3 or 4 inches of earth to make place for the new 6-inch base. The old pavement was in bad condition, apparently

due more to the many poorly repaired cuts made in it than to the exceedingly heavy traffic it has carried. A large percentage of the area had been opened during the four years it had been in service.

For tearing up the old surface, the contractors used a Keystone steam grading shovel or excavator, equipped with a 1/3-yard shovel bucket. On this machine the bucket runs along a boom, which may be held horizontal, and is therefore well suited for this kind of work. The shovel scraped up the old wood block easily, loading a 2-yard wagon in 4 or 5 minutes. This method worked well, despite necessary delays due to the passing of street cars and heavy traffic; but the need of the shovel was great on other parts of the work, so that much of the pavement was torn up by hand. In doing this work, the men were divided into gangs of 4 or 5. These men loaded the wagons by shoveling up the loose blocks and, while the wagons were dumping, tore up more of the pavement, which yielded readily to a pick. While two of the men

were using picks, the others tossed the broken-up blocks in a row near the curb, so that the team could drive in the narrow space between the car tracks and the curb and be free from interruptions by traffic while loading.

The shovel or grader was chiefly occupied at other times in excavating the concrete base and enough of the earth to bring the pavement to the proper elevation. The bucket ripped up the concrete base in large pieces, some of which had to be broken up by sledges before they could be handled by the shovel and loaded into wagons. This mixture of earth and concrete was hauled to a crusher about $1\frac{1}{4}$ miles away, screened to remove the earth and crushed for coarse aggregate. On the return trip, the teams hauled this aggregate back to the job, so that there was no loss due to hauling an empty wagon. The saving due to the use of the old base was also considerable, as the haul was necessary in any case to dispose of the material and the cost of crushing was considerably less than the cost of new stone. There was not enough of the old base, however, to supply all the coarse aggregate and a small quantity of broken trap rock was used.

To load, haul the material to the crusher, get a load of crushed stone and return required slightly over an hour, teams making about 7 trips in an eight-hour day. Each

section, the excess earth being thrown in piles along the curb. This allows the teams to drive between the car tracks and the piles and load without interruption from street cars or other traffic. The fine grading gang is composed of about 15 men, mostly shovelers.

A Koehring mixer is used for laying the concrete base, which is mixed in the proportion of 1 bag of cement, 1 barrow of sand and 2 barrows of coarse aggregate, or about 1:3:6, since the barrows carry about 3 cubic feet. The base is laid 6 inches thick. Dragon Portland cement made by the Lawrence Portland Cement Co., of Siegfried, Pa., is used. With a crew of 29 men, 875 square yards have been laid in 8 hours. Despite the delays due to traffic and stops caused by street intersections, about 700 square yards of paving strip 11 feet wide is an average 8-hour run. The concrete gang is made up as follows: 3 sand barrow men (these fill their own barrows), 6 stone barrow men, 6 stone loaders, 3 rakers smoothing the concrete, 2 tampers, 2 men in charge of the planks for moving the machine, one each brooming concrete, carrying cement, feeding cement and setting concrete grade stakes, one fireman, one engineer and a foreman. Of course but one side of the street and one half of street intersections is opened at one time.

This photograph shows the special kind of bucket used for pouring the mixture of sand and tar, the opening to the spout being at the bottom of the bucket. At first both applications of filler were poured into the joints. Later the first application was applied as explained in the text.



POURING THE SAND-TAR JOINT FILLER.

driver carried a card on which was punched the time of loading and that of dumping each load, thus furnishing a record of the work for each day. Only 2 to 3 minutes were required for the shovel to load a 2-yard wagon, though there was some delay on account of the numerous street cars. With 10 wagons on this work about 150 cubic yards of material was removed per day from a strip 11 feet wide and 8 inches deep. The amount excavated varied with delays due to traffic and with length of blocks and number of street intersections.

Five men and a foreman, who has charge of all traffic arrangements, such as passing street cars, are employed at the steam shovel, in addition to the engineer and the fireman. There are two shovelers, two men in charge of planks (who also assist in moving the machine forward), and a sledge man, who breaks up the larger chunks of the concrete base, as it is rooted up by the shovel, into pieces of a size suitable for loading into the wagons.

After the shovel has removed the old foundation and some of the earth, the cross-section of the street is sufficiently near the proper elevation as to require only fine grading. The sub-grade is therefore compacted with a steam roller and then brought to proper grade and

The pavement is of granite block laid on a 1-inch sand cushion. The blocks are of the latest type, $3\frac{3}{4}$ to $4\frac{1}{2}$ inches wide, 4 to $5\frac{1}{4}$ inches deep and $8\frac{3}{4}$ to 12 inches long. Side joints are not allowed to average more than $\frac{3}{8}$ inch between stones. Fred Hesse of Brooklyn is sub-contractor for laying the pavement. Blocks are furnished by Booth Bros. and Hurricane Isle Granite Co. of New York.

The pavers vary in number, from 5 to 12 being employed, with 1 helper for every 3 pavers. Three pavers work at once on the 13-foot strip, each carrying one course of blocks across. The men pick up blocks as needed from the pile behind them, using leather pads to protect their hands. After laying, the blocks are rammed to a solid bearing, low blocks being taken out and raised by adding sand to the base, and imperfect blocks being replaced by others. Tongs are used to take out and replace the blocks.

The filler is a mixture of coal tar pitch and hot sand. A mixture as near as possible to 1:1 is required, and since sand is cheaper than pitch, the contractor is willing to mix in as much sand as the pitch will carry. On this job 30 per cent of sand and 70 per cent of tar has been used most of the time, as higher sand mixtures do not

pour satisfactorily. The coal tar pitch specifications require that the free carbon present be between 21½ and 35 per cent, the melting point between 105° F. and 118° F. and the specific gravity 1.23 at 77° F. The sand must be clean and sharp and must pass a 10-mesh screen.

The tar is heated in a kettle equipped with a thermometer and is required to be kept between 250° F. and 300° F. The sand is dried in a special dryer of the same style as the pitch kettle but open on top, and is heated to the same temperature as the tar. The two are mixed in a special sand and tar mixer designed by Mr. Hesse. This consists of a small tank, through which passes a steel shaft, on which are paddle blades. A crank on the outside is geared to the shaft so that when the crank is turned, the paddles revolve. Tar and sand are poured and shoveled into the tank and mixed by the revolving paddles, which also keep the sand from settling to the bottom. The mixture as needed is drawn off into specially designed pouring buckets. These have a wide spout taken off from the bottom of the bucket with an opening about 4 inches square directly at the bottom so that the mixture comes only from the bottom of the bucket.

The buckets as filled are carried by two men to the pavement, the contents agitated with a stick and the mixture dumped on the pavement. The excess is scraped into the

joints. The filler invariably settles down and one or more applications are required to fill all the joints so they remain full. The second and succeeding applications are poured into the joints through the spout, but it has been found that considerable time is saved by pouring the first application without regard to joints. Considerable excess of filler is used generally and this forms a kind of a mat which deadens noise and protects the pavement.

Usually three pourers are required to keep pace with one paver; but by the use of the tar and sand mixer described above, the contractor has been enabled to cut his force of pourers one-half and has even found it possible to keep up while using only one pourer for each paver. In addition to the pourers, one man is required at all times on the crank of the tar and sand mixer, another heats and dries the sand and brings it to the mixer, and a third adds tar and sand in proper proportion. Traffic is allowed on the pavement only after the filler has set.

The street railway company also is taking up and relaying the granite blocks that have been in use between the rails for ten years. These are still in good condition and are being relaid on the old concrete base, using a sand bed and a pitch and gravel filler. In places a new concrete base is being laid and old rails, switches and cross-overs are being replaced.



TEARING UP THE OLD PAVEMENT WITH A GRADING SHOVEL.

The shovel bucket is specially designed for this purpose, with heavy teeth in front for lifting up the block wearing surface or concrete base. These were broken by the alternate lifting and horizontal movement of the bucket, without any hand labor except occasionally to break a slab, by hammer, to a size convenient for carrying in the cart.

REPLATTING A CITY AREA

Property Owners and City Authorities Unite to Vacate and Replat a Section of Portland, Oregon—Terms of Agreement—Legal Procedure.

BY C. F. FISHER.*

The council of the city of Portland, Oregon, in July, 1915, on the recommendation of Philip H. Dater, city engineer, adopted a resolution declaring that the plan of a certain section of the city, containing about thirty acres, which had been platted between twenty-five and thirty-five years ago, was improper and unsuitable and that it would require the relocation of the streets as a condition to the establishment of any grade or the improvement of any street in this section. The Street Extension Division of the Department of Public Works was directed by Commissioner Robert G. Dieck to make a study of the situation and report a plan for its correction.

It prepared and submitted "Plans" providing for the vacation of the five additions affected and the replatting of the property as one addition. The prevailing conditions suggested this as a practical and feasible remedy. It is in the midst of a good residence district; is inaccessible as laid out; contains but three houses, one of which will not be affected; has no improvements except a trunk sewer; and has a regular topography. The most powerful argument, however, that could be advanced to secure the consent of the property owners was the assurance that no special assessment would be necessary. This assurance could be given, as it developed that a proper plan of this section would create an excess area of about 28,000 square feet, equal to about six 50x100 foot lots, which will be of sufficient value to pay all costs and expenses of the undertaking and purchase land required for East 29th and East 32nd streets.

The accompanying maps show the additions and streets proposed to be vacated and the plan of the proposed addition. It seems expedient to curve the north and south streets in the proposed addition and thereby restrict the property affected by this undertaking. If these streets had been extended straight to Knott street, the additional property that would have been embraced within the project, being already accessible, might not have readily consented to the plans; it would have necessitated the moving of a dwelling house and the providing of new connections with the improvements in Knott street, which has walks, curbs and a hard-surface roadway; and would have caused jogs, or offsets, at Knott street.

In a general way, the Plans provide that all property shall be deeded to a trustee who will have the additions and streets vacated, record the proposed Replat, and reconvey. As there is no charter provision for an undertaking of this character, it was necessary to secure the consent and cooperation of all of the forty-five property owners affected. A special effort, therefore, was made to put the Plans in such form that, when presented to a property owner, they would constitute a plain, definite agreement to convey to him certain property in the proposed addition in exchange for the property to be deeded by him to the trustee.

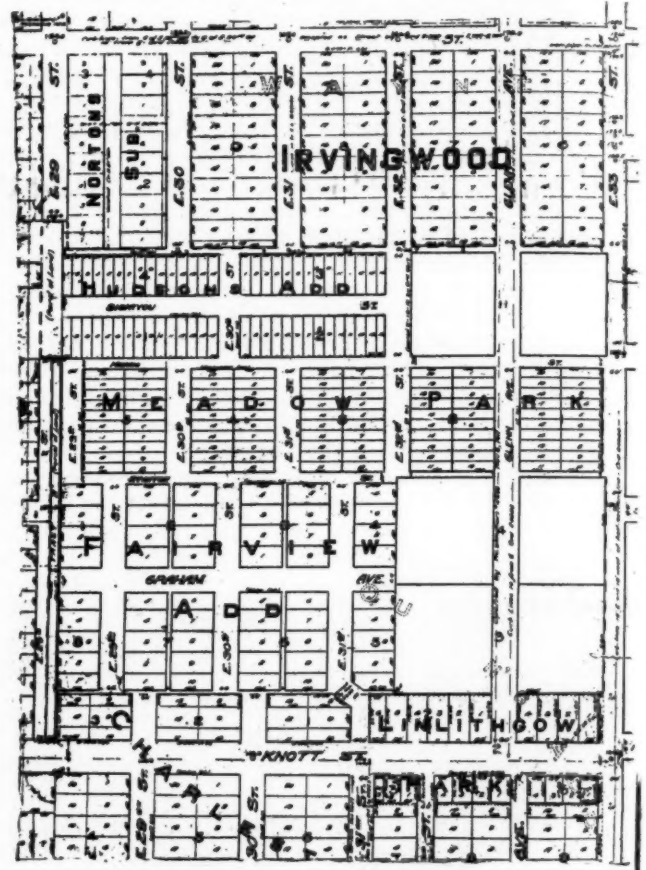
The following is a brief synopsis, or table of contents, of the Plans:

1. Map of additions to be vacated, scale 100 ft. to 1 in., showing ownerships.
2. Statement containing names of owners, description of

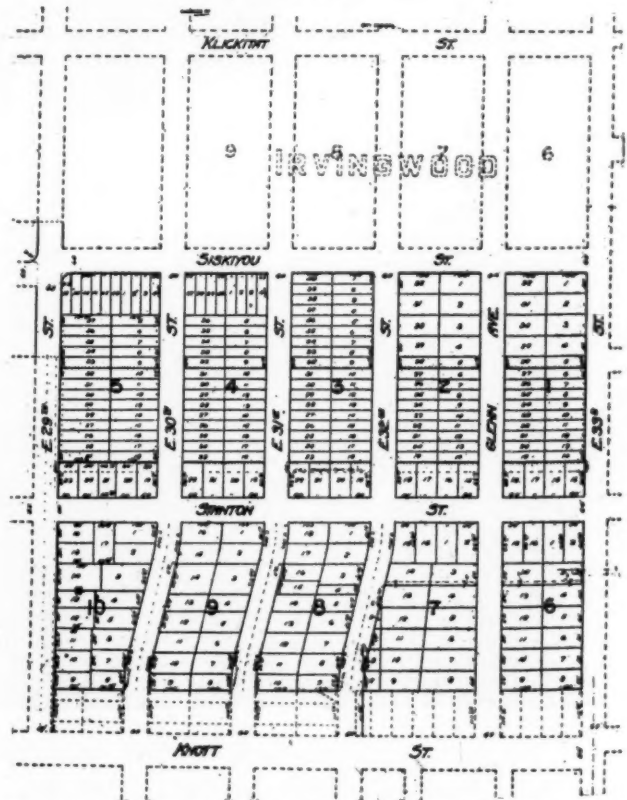
their property, frontage, depth, area and bonded assessments.

3. Map of proposed Replat, scale 100 ft. to 1 in., showing allotments.

4. Reapportionment giving names of owners, description



ADDITIONS TO PORTLAND, OREGON, AS THE STREETS WERE ORIGINALLY LAID OUT.



REPLAT OF SEVERAL ADDITIONS SHOWN IN THE OTHER PLAN.

*Chief of Street Extension Division, Department of Public Works, Portland, Ore.

of property allotted to them on the Replat, frontage, depth and area.

5. Recapitulation, showing present frontage and area, and Replat frontage and area of each owner, for comparison.

6. Copy of resolution adopted by the Council requiring the filing of new plats of these additions as a condition to the establishment of any grade or the improvement of any street in said additions.

7. A concise statement showing what will be required of the property owners, trustee, and city of Portland to accomplish the proposed vacating and replatting, the essential part of which is as follows:

Property Owners.

Each owner of property affected by the proposed vacation or replatting shall:

1. Deed to the trustee all of his property embraced within the Replat.

2. Satisfy all mortgages on property not to be re-conveyed to him.

3. Pay all taxes due or delinquent.

4. Pay all bonded assessments on all property dedicated as street on the Replat, or which will not be re-deeded to him by the trustee.

5. Clear up, to the satisfaction of the city attorney, any and all defects of title that may appear upon an examination of the same.

Trustee.

The trustee shall be a person or trust company to be decided upon by the council and the property owners. The trustee shall:

1. Prepare and receive conveyances from all property owners or others having interest.

2. Issue certificates of trust from the trustee in exchange for deeds, acknowledging the receipts of such conveyances and their purpose, and undertaking to convey certain other property shown in the Re-apportionment.

3. Have the streets, alleys and plats vacated.

4. Record the vacation plat and the Replat.

5. Prepare the necessary deeds and convey to the property owners according to the terms of the certificate of trust.

6. Hold all lots or property not allotted to present property owners in the Re-apportionment subject to the order of the city of Portland.

The City of Portland.

The city of Portland, through the city engineer, shall superintend and direct all proceedings connected with this undertaking. It will:

1. Prepare all instruments necessary for the vacation of said additions.

2. Prepare a plat of said vacation for recording.

3. Survey and stake the Replat.

4. Prepare a map of the Replat for filing.

5. Pay cost of trusteeship.

6. Secure a certificate from an abstract company showing condition of title of all land that will be dedicated for streets on the Replat or that is allotted to another than the present owner in the Re-apportionment.

7. Have same passed upon by the city attorney to determine if any title is defective, and, if so, to indicate the remedy.

8. Purchase land necessary to open East 29th street, between Irvindale and Gleneyrie, and to widen East 32nd street, between Knott street and the north line of Linlithgow Park.

9. Make due effort to secure the opening of all streets shown on the map of the Replat.

In consideration of performing the acts above specified and of the benefits that will accrue to the property that will be replatted without being assessed therefor, the city of Portland reserves all property remaining after all property owners have been allotted their portions as shown in the Re-apportionment, and it is hereby understood and made a part of these proceedings that the trustee shall convey any or all of said excess property to the city of Portland or to such person or persons as the council may direct or order.

Building Restrictions.

The usual building restrictions of a first class residence district shall be incorporated in the deeds to pass from the trustee to the property owners. The minimum cost limit of residences shall be \$2000.

Right of Way.

The Replat shall provide for a right of way for the 33rd street extension of the Sullivan Gulch sewer, now in place, and all necessary service connections.

Name Suggested.

"Waynewood" is suggested as the official name by which this property shall be known when replatted.

The plans were submitted to each property owner, or a representative, of whom ten are non-residents. After their consent and approval had been secured, the city commissioners considered the Plans at an informal meeting and agreed to its provisions that apply to the city of Portland. A joint meeting of the council and property owners was held on Jan. 13, 1916, at which the Plans were formally approved and the Title and Trust Company was selected to act as trustee and to submit a report showing the status of the title of all the property embraced within the proposed Replat. An agreement has been entered into between the city and the Title and Trust Company for the performance of its duties. This agreement provides that certain excess land shall be accepted by the trustee in payment of its services. It has completed the title examination and has submitted its report. This report shows that there are many apparent title defects to be remedied but none that will prevent the successful completion of this project. A form of trust certificate to be given in exchange for deeds has been prepared, and approved by the city attorney, and the trustee will now proceed to take title and carry out the provisions of the Plans.

NUMBERS OF WATER METERS—A CORRECTION

Through a slip in the type used for printing the table giving the number of water meters set in various cities during 1915, which appeared in our June 1st issue, which slip was not discovered before going to press, the numbers of meters larger than $\frac{5}{8}$ -inch attributed to the cities of Arizona, Arkansas, California, Colorado, Connecticut, Florida, Georgia and Idaho were all dropped about one line. To make the figures apply correctly it will be necessary, therefore, to read the numbers of each of the meters larger than $\frac{5}{8}$ as applying to the city of the line above. Our attention was called to this by a criticism of the statement that no meters were set in Hartford except 310 $\frac{5}{8}$ -inch meters, whereas as a matter of fact there were 371 meters of larger sizes. We are very sorry that this mishap occurred. Apparently the type slipped after the proof was read but before the printing was begun.

STANDARD UNITS FOR PAVING.

Editor, Municipal Journal,
50 Union Square, New York, N. Y.:

Dear Sir:—Permit me to congratulate you on your persistent, consistent, forceful and logical presentation of this most important matter, both editorially and as chairman of the American Society of Municipal Improvements Committee on Standard Forms, culminating in your excellent paper before the recent Seventh Annual Conference of Mayors of New York State, held in Syracuse, as reported and editorially referred to in the Municipal Journal of June 8th. It may not be as difficult to change or correct such a long established Municipal error as to "remove mountains," but it does not fall far behind. I want, however, to add a thought nearly as important as the universal adoption of "Standard Units" of prices in receiving bids and reporting costs. I refer to the importance, in reporting contract prices, of briefly stating the substance of specifications—such as depth and character of foundation; dimensions and character of curb, and as far as practicable even the local costs of standard materials and labor employed in the construction.

Perhaps the importance of this whole matter is pressed more persistently and forcefully on the writer than most men engaged in municipal construction because of his being the exponent of one of those "patented monopolies" which become the object of complaint, however unjustified, of every disappointed competitor, disgruntled politician and enterprising lawyer who wants to "earn an honest penny." There is perhaps no criticism made in attacks on the street, through the press and even in the courts

which is more annoying and requires more waste of time in explanation than such charges as: "In 'A' your price is \$3.25, while in 'B' your price for the same pavement is only \$1.25." The answer is not only that in the case of "A" the price includes "excavation," 6-inch "concrete base" and the "pavement" surface, while in "B" the "price" reported is of the "pavement" surface only; but also:

First—"A" is 2,000 miles from the point of production of asphalt and the rail freight on asphalt is \$17 per ton, while "B" is located within 200 miles of the source of asphalt supply and freight by water is \$1.50 per ton.

Second—In "A," stone costs \$2.75 per cu. yd. f. o. b. cars, including a high-rate freight of 150 miles; while in "B" stone is delivered by water at 80 cents per cu. yd. in bunkers at the pavement mixing plant, from which it is delivered to the plant by gravity.

Third—Common labor at "A" is \$3 per day (under normal conditions, but under present war conditions much higher), while at "B" labor is \$1.50 per day and the difference in cost of teams, fuel and other necessary commodities is in about the same ratio.

Ever realizing, as only we engaged in the business can

realize, what a vast difference there is in the cost of the same construction in different places, we are often surprised to get reports that the actual cost in one place for the same "unit" is nearly double that in another place perhaps only 500 miles away, and it takes a close, careful scrutiny of all items making up those costs to disprove the first thought that there must be some error in the report. Price reports on uniform unit basis are most useful and important, but even they cannot be fairly compared unless an extremely careful analysis is made of all local conditions in each case—such an analysis as would probably take a full page of carefully prepared typewritten matter to intelligently report.

"Keep up the good work," but don't let your readers fall into the error that there is not a great deal more to compare, even when reports are based on "Standard Units," than it is practicable for any table of costs or publication to enumerate.

Very truly yours,
WARREN BROTHERS COMPANY,
G. C. WARREN, President.

PRACTICAL STREET CONSTRUCTION---PLANNING GRADES

Adapting Grades to Abutting Property and Intersecting Streets—Grades to be as Uniform as Possible—Vertical Curves Between Changes in Grade—Railroad Crossings—Broken-Grade Streets.

In deciding upon exact location of a street on the plan, grade and cross section should be considered and the location of the street varied to secure the best conditions in each of these with a minimum expenditure for grading. This may mean the shifting of the street line up or down hill and the introduction of curves or a winding route for the street, in order to avoid excessive cutting or filling.

Not only should the grade of the single street in question be considered, but also that of the cross streets. Occasionally a cross street is carried under or over a hillside street by a bridge, but ordinarily the two cross or intersect each other at grade. Consequently the grades of the cross streets must to a considerable extent be planned at the same time as those of the hillside street, and each adjusted to the other so as to produce the best practicable results in the street system as a

One of the most difficult elements of designing hillside streets is the securing of the best or even fairly satisfactory conditions as to relative elevations of the four curb intersections and the four property line corners, together with the sidewalk slopes at these points. This problem will be discussed in a future issue.

Grades should be continuous, or change infrequently. Undulating grades are objectionable to traffic and also in appearance. On a main thoroughfare the grade should be made practically continuous at almost any expense of grading or modification of intersecting streets. Theoretically a hill should be mounted by a continuous grade, since any flattening of the grade at one point must be compensated for by steepening the grade at another. It will be desirable, however, to flatten the grade at intersecting streets if it exceeds 3%. If the street is a thoroughfare and the grade is not uniform throughout, the steepest part should not have more than double the average grade of the street if this is possible, nor should any such steep grade exceed 1000 or 1500 feet in length; since if the steep stretches are thus limited, they will not seriously reduce the weight of load which can be drawn up the hill.



Courtesy Barrett Co.
UNNECESSARY UNDULATION IN GRADE AT MIDDLE OF BLOCK, BUT NONE AT INTERSECTING STREET AT LEFT NEAR TOP OF HILL.
Bend in road or central parkway at top of hill would greatly improve the effect by removing the sky glare.

whole, combined with a minimum economy of construction. In such design, however, the relative importance of the two streets as thoroughfares should be considered, that which will carry the most and heaviest traffic being given the preference over local and minor streets in this inter-adjustment of grade and location.



Courtesy Paterson Mfg. Co.
GOOD VERTICAL CURVE.
17% grade in background. Argyle Avenue, Westmount, Canada.

A change in a street grade should never be made as an angle, but dissimilar grades should always be connected by a vertical curve. The longer the radius of this curve the better the appearance and the easier the riding. We would suggest, as a minimum length of such a curve, 20 times the difference between the steepest and the flattest grades, both grades being expressed in per cent, and one being minus if they slope in opposite directions. Vertical curves must sometimes be shorter than this rule would require, as where the grade is flattened at street intersections; but 150 to 300 feet seems to be the minimum length which does not appear to be objectionably abrupt. In crossing a main thorofare, the angle between the main grade and the crossing grade of the minor street may be fixed at the property line and the forward end of the curve at the curb line, thus giving the curve a length equal to twice the width of the sidewalk. Under certain conditions where neither street is a main thorofare, or for a main thorofare crossing a minor street, the grade angle may come at the curb line and the curve extend to the center of the roadway. In general, vertical curves should be of uniform radius throughout and therefore extend the same distance each way from the grade angle.

As in the case of roadway crowns, the simplest curve to lay out is a parabola, the ordinates of the curve from the grade lines varying as the square of their distances from the end of the curve. The middle of the curve will come half way between the intersection of grade lines and a chord connecting the two ends of the curve.

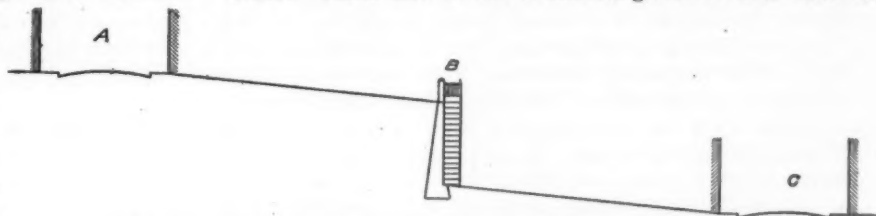
Vertical curves require a little more field work than straight grades for the laying out of the grades for curb, sidewalk and roadway pavement, but this is a matter of extremely minor consideration as compared with the improvement in appearance of the street. Moreover, the wear of the roadway from traffic and of this and the gutter by scour of street water is reduced by curves. This is indicated by the fact that nature always rounds off grade variations in this way; or if a stream bed should contain an angle in grade, excessive erosion will occur at this point.

In planning street grades it will of course be kept in mind that there should be no "pockets" or low points in any gutter which have no outlet to either a natural stream or a sewer which is already in existence or will be built before the street is completed.

Where steam railroads exist or it is possible to anticipate their future location, the grades should be so designed as to avoid grade crossings, even if considerable expense is involved. Many a city has found its vital interests seriously menaced by the interference with roadway traffic caused by grade crossings which are closed to street traffic at frequent intervals to permit the passing of trains or switching of freight cars. If possible, the track should be depressed and the streets raised, for a railroad fill through a town is a calamity, while a cut is not nearly so objectionable, and serves to conceal to a large extent the undesirable features connected with a railroad right of way. If the street passes over a railroad, a clearance of 18 to 20 feet is generally required. If the street passes under a railroad a clearance of 15 to 18 feet is customary. In a few cases where the street is carried under the tracks, the sidewalks are not depressed so much as the roadway, since a clearance at the sidewalk of 8 or 10 feet is sufficient, or 7 or 8 feet less than is necessary for the roadway. This not only permits a more nearly level sidewalk grade, but also one

which is not depressed so much below the abutting property and is less objectionable on this account.

Where a local street connecting two parallel streets would have an undesirably steep grade, an expedient is to run said local street at an approximately level grade from each of the parallel streets to a point about half way between them; at which point these two sections of the street would then be at considerably different elevations. At this point a retaining wall is placed across the street. Each half of the connecting street thus becomes



CROSS-STREET WITH GRADE BROKEN BETWEEN CORNERS.
A and C are thorofares. At B is retaining wall, and steps for pedestrians.

a dead end for vehicle traffic, and the roadway must be sufficiently wide to permit vehicles to turn. Steps are frequently placed along the face of the wall or parallel to the street line to permit foot traffic to pass from one level to the other and thus continuously through the block.

TRANSMITTING CONCRETE BY STEAM

Continuation of Description in Last Week's Issue—
Material Applied to Surface as with the "Cement Gun"—Apparatus Used.

BY J. F. SPRINGER.

Another important and recent system of concrete transmission makes use of high-pressure steam. The heat is claimed to be an advantage, promoting the chemical reactions. The concrete made, transmitted and placed by steam is said to have a specific gravity of 2.72, while hand tamped concrete has a specific gravity of about 2.19. It is claimed for steam concrete that it is very much stronger than the ordinary kind.

The pipe line and terminal arrangements are similar to those used with the pneumatic system already described. It is essential that the steam shall not condense *en route* to the placing point, and this may at times require heat insulation of the pipe line; although when the line is short, it is entirely practical to superheat the steam sufficiently to compensate for any thermal losses. Where heat insulation is necessary or advisable, the pipe line need not be made unreasonably cumbersome. It is proposed to use special pipe lengths heavily insulated with magnesia or some similar material.

This system has been used on a considerable scale, especially in cases where large masses of concrete were not involved. Not that the system is not adapted to handling concrete on a large scale; but so far it has been used mostly where the thickness of the concrete to be placed was a matter of inches only.

A notable example of its application to work similar to that encountered in sewers is the restoration of the lining of the Winston Tunnel on the Chicago & Great Western R. R. The tunnel is half a mile long and is rather old. At the beginning, it was lined with timber. Later on, a brick lining was put in inside the wooden one. With the passage of a quarter of a century or more, the brick lining became seriously disintegrated. The arch was in a particularly bad condition. In some places, "large sections of the inner ring" had "been completely destroyed." It was impractical to put an entirely new

lining within the brickwork because of the lack of space. To remove the brick entirely would have been expensive and risky. It was decided to apply concrete to the brick with the view of restoring the integrity of the old lining. The steam process was selected and used for this purpose. The concrete was mixed 1:3:2, the coarse aggregate consisting of pebbles. Water to the amount of 10 per cent by weight was added.

The apparatus used was quite different from that described in connection with the pneumatic process. The materials are mixed in a mixer compartment by the aid of rotating paddles. Adjoining this compartment was another—the atomizing chamber, the two being connected by a piston valve. The atomizing chamber communicated with the transmission line. While the mixing was going on, steam at a pressure of about 80 pounds (312° F.) was admitted. Part of the superheat was absorbed by the materials of the concrete. When it was judged that the mixing was sufficiently complete for the next step, steam at a lower pressure, about 30 pounds or 250°, was admitted into the atomizing chamber and allowed to discharge through the transmission line, cleansing it and heating it to prevent condensation during the further operation. The connecting valve between the two chambers was now opened and, the steam pressure in the mixing compartment being higher than in the atomizing chamber, this pressure, combined with the worm action of the mixing paddles, forced the concrete in to the atomizing chamber, the steam pressure now being about 40 pounds (267°). Here the concrete was "atomized." It was then forced into and through the transmission line by the steam pressure. It is highly desirable that there be sufficient heat in the steam as it issues from the discharge nozzle to prevent it from condensing until it and the accompanying concrete reach the point of actual placing. While this may not be essential to the proper formation of the concrete itself, it is desirable as avoiding a cloud of condensed steam between the nozzle man and the work.

The half mile of railroad tunnel was treated at a total



APPARATUS FOR STEAM MIXING AND TRANSPORTATION. Steam boiler at right; mixing apparatus at left. Lining aqueduct with concrete.

cost of \$4,600, including rental of machine, expert services, labor, materials, repair part, service of work train and the expense of the plant.

The action of placing the concrete is similar to that of the cement gun. At the beginning, the larger particles of the aggregate will not cling, but will fall to the ground. But as the bombardment is continued, a cement coating is laid on, followed by a mortar layer, and this by concrete proper. Probably some of the first sand and the first stone that really stick penetrate the first coat and come into contact with the surface being covered. The bombarding action apparently secures more than ordinary adhesion as well as more than ordinary cohesion.

The Delaware, Lackawanna & Western R. R. has repeatedly used this system. Upon one occasion, the service required was the consolidation of the stone lining of two old water conduits for which the railroad was responsible. The old mortar had dropped out, leaving open spaces between individual stones. The general surface was quite irregular. The work required here was done by the steam process. The boiler was set up above and merely the transmission line carried into the conduits. It was anticipated that trouble might arise from the condensation of steam in a confined working space, but no substantial difficulty arose from this.

Wire-wound rubber hose having an internal diameter of 1¾ inches has been found well adapted to such steam transmission. There seems to be no excessive wear with wet concrete. The couplings are rubber lined. It is expected, however, to use large, heat insulated steel tubes for handling considerable masses of concrete.

LOCAL HAULING BY STREET RAILWAYS.

The Bradford tramways committee has under consideration a scheme which it believes will open up a new era in local transportation. It is proposed to carry merchandise of every description and weight on the street railways. An experimental vehicle has been built at the Bradford tramway works, and its trials have been declared successful. It is run on the trackless trolley principle, but an important additional feature is that it is fitted with accumulators which will take their supply of current from the overhead wires, and will enable the vehicle to leave the tramway route at any point in order to reach its destination and deliver goods. These vehicles are to be run between the ordinary passenger cars. One of them will, it is said, be equal to 10 horses and carts. The idea has its inception in the shortage of horses and draymen, which has greatly handicapped carting and hauling during the past year.

COST OF MOTOR FIRE APPARATUS

Strict account is kept, by the fire department of East Liverpool, O. (of which A. S. Aungst is chief), of the costs of its motor fire apparatus. During 1915 the apparatus traveled a total of 4,174.7 miles at a total cost, excluding depreciation, of \$1,488.58; an average cost of 35½ cents per mile. The cost per day was 58 cents for each machine. Since the motor apparatus has been in service (periods ranging from two years to three years), the average cost per mile has been 21 2/3 cents. These figures include painting, oil, gasoline, all repairs, tires, etc. The saving in the past three years over horse apparatus is estimated at \$4,265.21 in maintenance alone, not considering the fact that it has been possible to reduce the force and still retain a high efficiency. Equipment now on hand includes a chief's car, a lineman's car, four motor driven combinations and a motor aerial.

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JUNE 29, 1916

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"Tented Cities" and Sanitation.

While this issue is being prepared, thousands of members of the militia of the several states are beginning a short and possibly a long period of camp life, during which they will have their attention called persistently to the importance of camp sanitation. (The officers and soldiers of the regular army are already thoroughly informed and drilled in it.) In the Spanish war typhoid killed several times as many of our boys as did the enemy. Consequently if, as we hope and believe, such loss shall be entirely prevented during the pending military activities, the sanitary engineers who achieve this result will prove themselves more useful members of the army than the soldiers who do the fighting; for they keep under control an enemy many times as dangerous as that fought with weapons.

The "tented cities" deserve that name in many respects. They must have adequate substitutes for many city functions—sewerage, water supply, refuse disposal and street cleaning. The anti-fly and anti-mosquito campaigns must be persistently prosecuted. These and other things that, in the city, are done so unobtrusively or so taken as a matter of fact as to escape consideration, in camp stand out in their true importance. If this idea of the importance of sanitary precautions is brought home convincingly to the soldiers and the country generally, this result alone will be worth a considerable expenditure in money and lives.

It is the small villages and the scattered country com-

munities which most need to take the lessons of camp sanitation to heart; for it is in them that the dangers inherent to concentration in camps are most closely paralleled. In small communities, individual sanitary precautions must largely take the place of the health protection afforded by the municipal sewer, the safe public water supply, the white wings and the garbage disposal service. The dwellers in such places must be brought to realize the dangers more or less commonly existing in shallow well and surface waters, in open privies and uncovered and leaky cesspools, in fly-breeding heaps of manure and other organic dirt, and in mosquito-breeding ponds or pails of water. And they should learn from camp sanitarians the methods of minimizing the dangers from such conditions if the conditions themselves cannot be eliminated.

It used to be said that the disbanding of an army scattered disease throughout the nation. It is to be hoped that the disbanding of this army will distribute a leaven of sanitation throughout the land.

Replating Outlying Streets.

Replating of residence additions to eliminate irregular, crooked and "blind" streets and streets of varied widths has been found desirable in several instances in Portland, Oregon, and has been performed by the Public Works Department. A number of additions have been rearranged and replating of others is pending. The process has involved but little expense either to the city or the property owners.

In Portland as in many cities, particularly in the West, real estate additions have been laid out by the owners or developers so as to furnish the greatest number of lots, with little or no consideration of the relation of the plot to adjoining sections. The result has been that streets have not joined with streets of abutting additions, have varied in width, and in many instances have ended at the edge of the addition with no outlet. In some cases, as the city has grown and arterial roads have been developed, costly extension proceedings have been necessary to eliminate the jogs and curves. A long street that forms the main outlet to a section may be blocked by a reverse curve or a jog that has come from irregular platting in the days of the realty boom.

Portland's experience has been that there is no use of proposing a replat unless the campaign is begun and proceedings put through before the additions have become extensively improved with homes. A striking example of the work accomplished is the replating of Hudson's Meadow Park and Fairview Additions to Portland. Here was found an irregular addition with irregular streets, of various widths and in a number of instances "blind" at the edge of the addition. The Public Works Department worked out a plan whereby the streets could be made to connect, without sharp curves, with the streets in adjoining additions. The plan involved the elimination of several small streets that led nowhere and the replating of others to a uniform width. The property owners, after much campaigning on the part of the city, turned all their property over to a trustee. The City Council authorized the replat and the re-establishment of lines.

When the replating had been completed, every property owner was given back as much ground as he had held before, the streets were all straightened and there was enough vacated street area left over to pay the cost of all proceedings, including the rebuilding of sewers and the moving of one or two homes. How this was done is described in this issue by the chief of the department which prepared the plans for the re-subdivision.

SIDEWALK, CURB AND GUTTER UNITS.

The A. S. M. I. standard unit for sidewalk paving is used similarly to that for roadway paving. The square foot (or square yard, if preferred—the price will indicate which is used, even it is not stated) is the unit to be used, giving average thickness and material. The unit does not include the base nor any excavation or embankment. The reasons are the same as for the roadway. Including excavation or embankment would introduce such variables as to make any cost figures of no practical value, even for comparing paving in different contracts in the same city. Where there is a standard construction as to base in a given city, comparisons for that city of costs including base would be serviceable so long as the standard method was not changed. But such standard may be changed at any time; and as it varies in different cities, comparisons between cities would be of little value unless the base be eliminated. If a city insists on lumping the two in one item, however, it should refer to this as "sidewalk and base"; example: "1,720 sq. ft. of 6 in. concrete sidewalk on 8 in. cinder base." The thickness of the sidewalk given is the average, if it is not uniform throughout. It would perhaps be well to specify whether the concrete is laid in one or two courses, and the proportioning of the ingredients, as this can be stated briefly and adds to the definiteness of the statement, as: "1,720 sq. ft. of 6 in., two-course, 1:2½:5 concrete sidewalk." But this is not considered as an essential to the standard unit.

For gutters also the standard unit is the square foot of stated thickness, naming the material. Present practice, where the roadway is paved with any material on a concrete or other base, is to continue the same wearing surface across the gutter to the curb; in which case the gutter is included as part of the pavement. Gutters as separate items are therefore to a large extent confined to macadam, gravel and dirt streets. They are generally of concrete, flat stone, or cobble; the constructions of which are so different that the only practicable method of comparison appears to be to consider the whole construction under one item, which includes any base used, as well as the top surface; but does not include excavation or fill.

Curbs may be of concrete, without special backing or base; or of stone, preferably bedded on broken stone or concrete and with the same as a backing. As in the case of gutters, therefore, it seems impracticable to consider the curb separate from the base and backing; and the whole is included as one item, with the lineal foot, giving dimensions of curb, as the unit; this not to include excavation, or drain tile, if any is used. Combined curb and gutter is given in lineal feet, adding the width of gutter, thus: 1,720 ft. of combined concrete 6 x 12 curb and 6 x 18 gutter.

STREET CLEANING IN PHILADELPHIA

Before 1915 the street cleaning specifications in Philadelphia, though stipulating definite services to be performed, did not require the contractor to furnish any specific force or equipment to perform his work. In 1915 a definite schedule of the minimum amount of equipment and the minimum labor force required in each district was stated, thus enabling the contractor to know before bidding exactly what would be required of him.

The horse-drawn high-pressure flushers that were used in 1914 and in part in 1915 have not proved as efficient as was originally anticipated, particularly because the light weight and construction could not withstand the wear and tear of operation over the rougher streets, where, of course, these flushers were particularly required to operate. In 1915, therefore, in two of the street cleaning districts the contractors were required to furnish an automobile flusher. The work performed by these flushers was made the subject of very careful tests and analyses and data were obtained as to the efficiency of this machine when operating at different speeds, different pressures and different sizes and positions of nozzles, until at last the method of operation was determined in which the maximum efficiency was attained. In working under these conditions, the services performed by the automobile flusher were found to be so much superior to those of the old style horse-drawn flushers, as was also their resistance to wear and tear, that these automobile flushers have been specified exclusively for this class of work and seven auto flushers are or will be in operation this season.

Another advance in the department was the provision for cleaning suburban streets and country roads. Prior to 1915 street cleaning work covered only the paved streets. Now a force of uniformed men are at work on the suburban roads, resulting in a great improvement in appearance at a slight cost.

During 1915 special effort was made to obtain and classify as many data as possible as to the costs and most effective methods of street cleaning. Not only automobile flushers, but also the other types of apparatus have been made the subject of special investigations and each kind of apparatus employed has been studied carefully and the results analyzed in an effort to ascertain the method of operation producing the best results. A synopsis of actual costs of operation and cleaning the various types of streets is given in the accompanying table. Part of these figures were, as indicated, taken from the log of special tests which were made; the others from the actual operating figures of the several districts as contained in the daily reports.

STREET CLEANING COST DATA—UNIT COST PER 1,000 SQ. YDS.

District No.	MACHINE BROOM				SQUEEGEE		FLUSHER		BLOCKMAN	
	Granite Block	Brick	Wood Block	Sheet Asphalt	Average unit cost All classes	Average unit cost Dist. reports	Average unit cost Spec. data	Average unit cost Dist. reports	Average unit cost Spec. data	Average unit cost Dist. reports
1-A .....	.183	...	...	.134	.179	.218	.131	.229	.083	...
1-B .....	.220	.193	...	.128	.212	.176	.174	.165	.108	...
2 .....	.290	.211	.177	.160	.280	.275	.130	.132	.085	.191
3 .....	.266	.171	.135	.145	.252	.310	.118	.175	.143	.277
4-A .....	.243	...	.203	.188	.241	.310	.176	.282	.250	...
4-B .....	.242	.218	.205	.168	.216	.377	.115	.223	.127	...
5 .....	.271	.218	.157	.182	.232	.313	.218	.166	.117	...
6 .....	.234	.178	...	.163	.205	.232	.137	.179	.119	.32
Average .....	.246	.193	.166	.159	.226	.277	.148	.179	.106	...
Gallons water used per 1000 sq. yds. cleaned .....	...	...	...	...	...	98	...	240	...	522
Cu. yds. dirt removed per 1000 sq. yds. cleaned .....	...	...	...	...	...	.118	...	.044	...	...

NOTE.—Cost of water 4 cents per 1000 gallons. Included in special test data but not in District daily report costs.

Districts No. 3 & 6 operating auto flushers. Flusher dirt removed by blockmen.

Squeegies used on sheet asphalt and wood block streets only.

Daily cost of labor and equipment assumed as follows: Blockmen, \$1.50; Gangmen, \$1.75; Machine Broom, \$5.50; Squeegee, \$6.00; Dirt Cart, \$3.50; Dirt Wagon, \$5.00; Sprinkler, \$5.00; Auto Flusher, \$15.00.

The WEEK'S NEWS

State Highway Work in Iowa and Wisconsin—Contractors Win in Richmond, Va., and Schenectady—Greater Boston's Water Supply—The Los Angeles Rate Case—New White Ways in Fulton, Ky., and Philadelphia—Firemen Killed in Accidents in Newark and Elizabeth—Philadelphia's Big Improvements—Ousting in Kentucky and Virginia—Butte Tied Up by Strikes—The San Francisco Municipal Car Fight—Los Angeles, Largest City—Survey for San Francisco—The Districting of New York.

ROADS AND PAVEMENTS

Highway Work in Iowa.

Des Moines, Ia.—Iowa spent \$13,525,364 on roads and bridges in 1915, according to a statement just issued by the state highway commission. The report shows that \$6,629,252 went into bridges, \$3,403,000 to the county road system and \$3,171,000 to the township road system. In 1914 the state spent \$11,601,000 on roads and bridges; 25.3 per cent of the work on roads being permanent and 53 per cent of the bridge and culvert work being permanent. In 1915, 41.4 per cent of the road work was permanent and 61.6 per cent of the bridge work was permanent. County engineering figured 2.75 per cent. and the state highway expense .60 per cent, a total of 3.35 per cent for engineering. During 1915 there were 462.7 miles of road constructed to permanent grades at a cost of \$618,138, or \$1,336 per mile; 355.9 miles constructed to temporary grades at a cost of \$262,868 or \$682 per mile; 2,358.8 miles constructed to natural grades at a cost of \$359,205 or \$152 per mile; 182 miles were hard surfaced, and 15,400 miles were dragged an average of 29 times, at an average cost of \$0.713 per mile one round trip.

A comparison of the work accomplished during 1915 with that accomplished during 1914, is as follows:

	1914. Miles.	1915. Miles.
Built to permanent grade.....	418	462.7
Built to temporary grade.....	416	355.9
Tractor grading	1,210	2,358.8
Surfaced	75.6	182

Due to the provision of the law requiring that road grading must be advertised, the price of such work has been forced down to an average of 18 cents or 20 cents per cubic yard, whereas formerly such work cost from 25 cents to 50 cents per cubic yard.

State Highway Act Upheld.

Madison, Wis.—The state highway law for road improvements has been upheld by the supreme court in the case of Dane County against the city of Madison to compel the city treasurer of Madison to pay approximately \$43,000 assessed against it for road improvements in the county. The compelling of residents of cities to contribute to improvement of highways located outside of their municipal territory presents no constitutional objection, and if actual inequalities of burdens result, the court says that is a subject for legislative consideration.

Contractors Win in Bridge Suit.

Richmond, Va.—Claims of I. J. Smith & Co., contractors, against the city of Richmond for \$41,000 in the Mayo bridge controversy were sustained by the state supreme court of appeals, the demurrer filed by the city being rejected. This decision is understood to end the litigation after several years of contest and argument. Unless the matter can be reopened, which is not considered likely, the city will have to settle the contractors' claim. Litigation in the matter grew out of a claim submitted to the administrative board several years ago by I. J. Smith & Co. upon completion of the new Mayo bridge, which had been built by the contractors in question. It was claimed by the contractors that by reason of mistakes or omissions in the preliminary plans for the bridge drawn by the city engineer the construction cost proved to be much more than the engineer's

estimates showed. Following conferences the city attorney suggested that the matter might be compromised. The compromise recommended was not satisfactory, however, and the case was thrown into the courts. In the lower court the claim of the contractors was upheld. The city appealed and in answer to the demands of the contractors filed a demurrer in the supreme court of appeals to show, if possible, that the contractors had no reasonable grounds for suit. It is this demurrer which has been rejected.

Concrete Road for Boom Town.

Hopewell, Va.—Work has been started on the building of the Hopewell-Petersburg highway to cost \$106,000. The Austin Bennett Construction Company, of Baltimore, is doing the work. The road is being built under the supervision of the state highway commission and will be of concrete, fourteen feet wide. The DuPont Powder Company and the city of Petersburg each subscribed \$25,000, Prince George county \$40,000, and the remainder came from private subscriptions. Forces started to work on both the Hopewell and Petersburg ends.

SEWERAGE AND SANITATION

Sewerage System Contractors Win Damages.

Schenectady, N. Y.—A decision awarding \$67,006.39 damages to the Pratt, Reed & Phillips Company, contractors, for the sewage disposal plant, has been handed down by justice C. C. Van Kirk in the supreme court. The decision finds the city liable for the balance due on the contract, less the 2½ per cent interest retained for performance of the work, and also for a large number of items due to the finding of quicksand, changes in location of the plant, changes in plans and other extras. The plaintiffs sued for \$118,000 plus the \$31,000 balance on the contract and 2½ per cent interest, making a total, exclusive of the interest, of \$149,000. The plant was built in 1914-15 and the claim for extra compensation was filed soon after. The trial was characterized by a large amount of expert testimony offered by each side. Corporation Counsel Cooper has announced the city would appeal the case.

Infantile Paralysis Epidemic.

New York, N. Y.—An epidemic of infantile paralysis in Brooklyn is increasing. Twelve additional cases were reported to the health department in one day, making forty-three. In addition, there are between fifty and sixty cases marked "suspicious." The new cases are mostly in an Italian settlement. All but two cases are reported to be children under ten years old. In one house three deaths from infantile paralysis were reported in one day.

Begin Work on Interceptor Sewer.

Binghamton, N. Y.—The Sewage Disposal and Water Plant Co. of Schenectady has begun work on section 1 of the intercepting sewer system, for which it was awarded the contract last month. A small force of men have begun excavating for the purpose of changing the flow of that portion of the main sewer now emptying into the Susquehanna river, so that between Water street and the river it will flow northward into the State Hospital sewer. The sewage will then be carried across the river into the interceptor. The contractor plans to erect a number of shacks in which to house the employees he will bring here. This will be done before any extensive work of excavation is

undertaken. The contractor hopes to do much of the river work during July and August, when the river is low, and will push the excavation as rapidly as possible. Deputy city engineer Arthur La Roche will be the representative from the engineering bureau to have supervision of the construction work, and an inspector will be appointed by the city to look after its interests continually during the process of construction.

Typhoid Epidemic Traced to Milk.

Bellefontaine, Ohio.—Thirty-five cases of typhoid fever have occurred here and there has been one death. The typhoid infection has been traced to a milk supply, all of the victims of the disease being on a single dairyman's route.

Milk Control in Newark.

Newark, N. J.—After July 1 storekeepers will have to sell either bottled milk or condensed milk. The law forbidding the sale of loose or dip milk from cans will go into effect on that date, according to an announcement by Chairman Littleton Kirkpatrick of the foods and drugs committee of the Board of Health. Notices will be sent to the dealers. Originally the law was to have become operative September 1, 1915, but was postponed from time to time to give the local milk dealers a chance to complete plants for the production of bottled milk. Under the bottled milk arrangement, Mr. Kirkpatrick declared, the board will have better control, with two-thirds of the milk consumed in the city under its direct supervision. The intention of the board is to have two grades of milk, raw milk, which will be produced under conditions warranting certification, and pasteurized milk.

WATER SUPPLY

The Northern New Jersey Water Commission.

Newark, N. J.—Morris R. Sherrerd, chief engineer of the board of public works and a well-known authority on public utilities, has been elected engineer of the Northern Jersey water commission, at a meeting held in its temporary quarters in Jersey City. It is believed that now an engineer has been elected there will be no delay in going ahead with the proposed development of the Wanaque river watershed, and that the city of Newark will make application immediately for the development of the watershed. A survey of the watershed region will probably be begun soon.

The Greater Boston Water Supply.

Boston, Mass.—Never has the Metropolitan district had a better supply of water than at present, and with the reservoirs under the control of the Metropolitan water and sewerage board full to capacity the supply of water for Greater Boston amounts to 80,593,000,000 gallons, or sufficient to meet all the demands of the district for fifteen months without another drop of rain. There has been so much water in some of the reservoirs that it has been necessary to open the sluiceways. The amount of water in the reservoirs is given in the following table:

Reservoir—	Gallons.
Clinton	64,968,000,000
Sudbury	7,253,000,000
Framingham, No. 1	287,000,000
No. 2	530,000,000
No. 3	1,183,000,000
Ashland	1,416,000,000
Hopkinton	1,521,000,000
Whitehall	1,257,000,000
Farm Pond	167,000,000
Cochituate	2,011,000,000
Total	80,593,000,000

While the supply is the largest since the district was organized in 1895, the consumption is being steadily reduced, due to the more general use of metered service. The average daily consumption in 1906 was 118,820,000 gallons a day, or 137 gallons per capita per day. Last year the average daily consumption was 101,941,500 gallons, or an average of 88 gallons per capita per day. The latest figures available are those for April, showing that the consumption has decreased further to 100,227,300 gallons a day. The

board is nearly ready to deliver electric energy from the Sudbury dam to the Edison Company. The plant will be started within a short time and it is expected to bring a net profit to the district of \$8,000 to \$10,000 annually. The plant at the dam in Clinton, from which power is sold to the Connecticut River Transmission Company, has been in operation for five years. The profit to the district last year was approximately \$12,000. The board now has at its disposal an appropriation to connect the two power plants by transmission lines so that power can be delivered at either plant. The line will be constructed if the board is convinced that it will be a paying proposition.

Reservoir Work Nears Completion.

Binghamton, N. Y.—Work on the new 3,500,000-gallon reservoir which is being constructed on South Mountain is nearly completed. This reservoir is to be roofed over with concrete so that the contents will be protected from contamination at all times. Ventilating pipes will allow proper ventilation for the stored water, but when completed the top of the reservoir will be sodded over. The only structure on the surface will be the gate house, where control of the valves for opening and closing the main leading to the reservoir will be placed. The reservoir will serve the South Side. The small standpipe which is used in connection with the high-pressure system to supply water to residents on the crest of House's Hill and South Mountain will be completed in a short time. The second reservoir, which is to be built on Mount Prospect, 57 feet above the present Mygatt street reservoir, will be commenced as soon as possible, as the new system cannot be used until this is finished. Nothing can be done until the Court of Appeals has decided the question whether the water department comes under the department of public works. This case is to be argued in September and a decision will be handed down in October. It is the consensus that the decision of the lower court will be affirmed and the water department turned over to the public works commissioner. In that event the first thing to do will be to issue bonds sufficient to build the Mount Prospect reservoir. These bonds will be chargeable to the water department and will be paid from the earnings of that department. It will require 18 months to let the contract and build this reservoir, which will provide for 3,500,000 gallons storage. The present reservoir will be connected with the low service system, while the two new reservoirs will furnish water for the intermediary system and the small reservoir or standpipe for the high service lines.

STREET LIGHTING AND POWER

Hearings Close in Los Angeles Gas Case.

Los Angeles, Cal.—The gas-rate hearing which has been held before State Railroad Commissioner E. O. Edgerton for two months, has closed with the introduction of the evidence of the engineers of the commission. Each of the attorneys were given 30 days to submit briefs and 10 days additional to file answers to the opponent's argument. The Municipal League will be permitted to submit an argument. President Fulton Lane of the board of public utilities, on cross examination, stated that, while he did not believe the taxes on the gas companies should be borne by the public, he did not wish to be understood as advocating confiscation by taxes. The witness was questioned closely by Attorney Herbert J. Goudge of the Los Angeles Gas and Electric Corporation on the accuracy of the calculations made on the valuation of the plants as contained in the tables and charts which have been submitted by the city in support of its contentions. The attorney attempted to draw from the witness an admission that there was a mistake in calculations which amounted to nearly \$500,000. The attorney asked why the calculations representing 77 per cent of the valuation, which is the portion of the property of the company in the city of Los Angeles, were used to represent the valuation of the plants, while 100 per cent of the value was deducted in eliminating plants which the city contends are unnecessary for the distribution of natural gas. The witness said that the figures were represented in two different charts, one of which was prepared by

Charles H. McGwire, engineer of the board of public utilities, and the other by himself. He was asked to check up the apparent discrepancy and testify to this point later. With the termination of the cross-examination of Charles H. McGwire, the case for the city was closed. The cross-examination was cut short by Commissioner Edgerton, who suggested that engineers of the commission make a check on the calculations of the substitutional distributing system for natural gas which the city placed in evidence. Attorney Goudge attempted to show that serious errors had been made by the witness in calculating the size of pipe which would be needed to carry a million feet of gas an hour in this substitutional system and therefore the estimated cost was nearly double the amount stated by the city. Mr. McGwire testified that he had allowed sufficient leeway in his calculations to make the cost favorable to the company and that any errors in the tables would make no material difference. Commissioner Edgerton abruptly terminated the cross-examination by stating that he frankly admitted that it was doubtful if the substitutional system would be used by the commission as a basis for fixing gas rates. Albert Lee Stephens, city attorney, suggested that each side appoint an engineer to assist Engineer Reedy of the commission in checking the calculations of Mr. McGwire. It was finally understood that Engineer Reedy could consult with the city and company engineers and report.

James E. Barker, rate engineer, was recalled as rebuttal witness for the company. He presented a number of charts and tables comparing the volumes of gas used for the first five months of 1916 with that of last year. He showed that while there has been a gain in the volume of gas for the past months in Los Angeles, it is not as large as he had estimated in a table presented in the case two months ago. He said the tendency is downward in the comparative gain in meters and in sales. This evidence was introduced to show that the estimates of the city of the probable gain in the consumption of gas in the city until 1920, are extremely high and not in conformity with the present experience. In answer to questions by Commissioner Edgerton, the witness stated his conclusions of the downward tendency did not take into consideration a number of years, and admitted the present conditions might be regarded as a slump. Mr. Barker said he had estimated that there would be about 135,000 meters in Los Angeles at the end of this year. The present experience for the first five months of the year showed, he testified, that he had overestimated it thus far by about 16 2/3 per cent. The case closed when engineers Paul Thelan, L. S. Reedy and W. J. Hammond of the commission presented their reports on the valuation of the property of the Los Angeles Gas and Electric corporation. The figures of the engineers of the commission were practically the same as those of the experts of the company, except in the distribution system cost and the overhead expenses.

Cooke to Be Paid for Rate Case.

Philadelphia, Pa.—With only three dissenting votes, councils have passed an ordinance appropriating \$41,636.36 to reimburse Morris L. Cooke, former director of public works, for expenditures in his successful case against the Philadelphia Electric Company. The efforts of Cooke saved the city \$327,000, and won for private consumers of electric current \$900,000 a year in reduced rates.

Offer Lower Rates at Threat of Municipal Plant.

Memphis, Tenn.—An offer has been made to furnish the citizens of Memphis with electric light at the rate of 7½ cents per kilowatt by the Merchants' Power Company and the Memphis Consolidated Gas & Electric Company, providing the city government would permit the two companies to consolidate. The offer was refused. The city demanded a 5-cent rate, or half of the present rate. If the companies consolidate, the franchise of the Merchants' company requires the payment of \$100,000 to the city. The offer of the companies is predicated upon the city postponing for a period of years the erection of a municipal plant. This offer was made in an executive conference held between officers of the lighting companies, the mayor and city commissioners, the lighting committee and F. W.

Ballard. Mr. Ballard, the appraiser of the plant, hired by the city, had just handed in his report. "My recommendation is that the city of Memphis abandon the proposition to purchase the property of the Merchants' Power Company, proceed at once to sell their bonds, build a municipal lighting plant and start 5 cents per kilowatt as a maximum charge," was the recommendation of the expert.

Business Men Donate White Way.

Fulton, Ky.—Fulton's white way is now assured, business men and others interested in this city's growth having donated a total of fifty-four posts for the way. Work is in progress and the white way will be open by July 4. Governor Stanley and other notables have been invited to attend the celebration.

A New White Way for Philadelphia.

Philadelphia, Pa.—From his office at City Hall Mayor Smith pressed a button which switched on 310 new double arc lights in Broad street. The lights are similar to those in the center of the city. They will make Broad street, it is claimed, the longest street lighted by electric lamps, and the best-lighted long street in the country. The street will be uniformly lighted from end to end, a distance of ten miles, and twenty-five feet. The total candlepower will be 624,000, or about 8,000 candlepower per square. Installation of the new lights was begun March 5, and Chief McLaughlin of the electrical bureau completed the work in record time. With the new lamps in service it will cost the city \$75,115 for maintenance of the electric lights in Broad street.

FIRE AND POLICE

Los Angeles to Have Prevention Bureau.

Los Angeles, Cal.—By the adoption of an ordinance recommended by Fire Chief Eley the city council has created a fire prevention bureau. The bureau will consist of six inspectors in charge of a fire prevention engineer and a deputy fire prevention engineer. There will also be six civilian inspectors from outside the fire department who will serve without pay. Authority to call in the police department to enforce its orders for the elimination of fire hazards is given the bureau.

Firemen Killed in Accidents.

Newark, N. J.—Answering a false alarm said to have been turned in by a negro boy, motor engine 25 collided with the horse-drawn tender of engine 12 at a street intersection. Second driver Richard C. Duenwald was killed and six firemen were injured. Several pedestrians, including a woman and children, were injured and had narrow escapes.

Elizabeth, N. J.—One fireman was killed and one seriously injured when a ladder of a truck broke during a drill. Paul Zellmer, tillerman, was at the top of the ladder and five others were lower down when the extension suddenly began to bend. It struck some wires and the main ladder snapped, bringing the men down with a crash. Louis Fraatz received a compound fracture of the leg and other injuries. Mrs. Zellmer saw her husband killed. He had served in the fire department for twenty-five years and he was forty-five years old.

Nearly Two Platoon System for Bridgeport Firemen.

Bridgeport, Conn.—In voting to grant members of the fire department four extra twelve-hour leaves of absence a month with full pay, in addition to the regular four twenty-four-hour leaves and the annual week vacation, members of the fire commission have introduced the entering wedge for the two platoon system. The extra leaves will be with the proviso that there are sufficient men remaining in each company. During the past year the members of the department made a determined fight for the introduction of the two platoon system, under which they would be required to be on duty twelve hours a day instead of twenty-four hours. The measure was endorsed and adopted by the board of fire commissioners and it is said to have been promised to the firemen. At the last minute, however, the administration having planned so many other things entail-

ing such enormous expenditures it was not deemed wise to saddle another \$80,000 debt onto the city which would have been necessary. The new plan is the best that can be used. The extra time off is made possible by the recent addition of fourteen men in the department. Captains must always maintain the minimum force of men: six to an engine company, five to a chemical company and eight to a truck company. On any night when the number present for duty happens (by reason of men absent on account of vacation, regular days off, sickness, etc.) to be less than the minimum, the extra leave for that night cannot be allowed.

GOVERNMENT AND FINANCE

Big Public Improvements Authorized.

Philadelphia, Pa.—Passing ordinances authorizing three new municipal loans in rapid succession, common council took another important step in the program of legislation necessary to make available the \$114,525,000 voted by the people for important public improvements. There was not a dissenting vote cast against any of the measures. After passage by select council and signature by the mayor, the finance committee will report favorably to councils a series of authorization and appropriation measures, which will place the money in the hands of the various city departments, and provide for the inauguration of many of the developments. The \$67,100,000 loan for transit and port improvements was the first taken up by common council. Then the \$42,450,797 loan for general improvements was passed, and the chamber voted favorably upon the \$4,974,203 loan to meet deficiency and maintenance bills. Permission was granted to the Baltimore & Ohio Railroad company to relocate certain tracks, to provide for the grading of the street and its improvement under the South Philadelphia grade crossing agreement, for which money is contained in the new loans. Joseph P. Gaffney, chairman of the finance committee, introduced an ordinance to authorize the construction of a sewage disposal system and plant in the Frankford Creek area. The new general loan carries \$3,200,000 for this work. The transfer of 11,000 gasoline street lamps to gas lights recommended by Director of Public Works Datesman and Mayor Smith, was authorized by councils. This will save the city about \$70,000 a year, it is estimated. Six hundred thousand dollars out of the \$1,000,000 loan item voted last year for the improvement of the Philadelphia General Hospital was appropriated to the Department of Public Health and Charities for a new power plant, new nurses' home and pathological laboratory.

Votes Against New Charter.

Newport, R. I.—By a vote of 2 to 1, in a special election, Newport has rejected the proposed changes in the city charter as contained in an act passed by the general assembly at its last session. The vote, one of the lightest ever cast at Newport, stood 1,247 against changing the charter and 634 in favor. The proposed changes, if they had been approved, would have reduced the number of councilmen from 195 to 25; would have changed the election of city officers to biennial; would have made the election of aldermen by wards instead of at large; and would have gone back to the old form of nomination, doing away with the present system of nominating candidates by nomination papers alone. In only one ward out of the five in Newport were the proposed amendments approved. In this ward the vote split as closely as it could, the amendment being approved by a single vote.

Test Case on Bond Denominations.

St. Louis, Mo.—There has been filed in the State Supreme Court a friendly suit to determine certain technical legal points in connection with the \$3,000,000 road bond issue authorized by St. Louis County at a special election, February 15. The legality of the bond issue itself is not questioned. The suit is in the nature of a mandamus action brought in accordance with a plan agreed upon between prosecuting attorney Ralph and the state officials. Attorney Barnett, representing Ralph, took to Jefferson City and offered for registration by the state auditor an issue of the

bonds aggregating \$520,000. This issue, in denominations of \$100, \$500 and \$1,000, comprised 600 separate bonds. The state auditor will refuse to register the bonds on the ground that they have not been prepared in accordance with the statutes. The mandamus suit will seek to compel their registration and is expected to result in an interpretation by the supreme court of the clouded points of the new state statute under which the bond issue was authorized. An interpretation of this statute will be watched with interest by other counties which have voted or are contemplating such bond issues. The legal points raised, prosecuting attorney Ralph said, affect only the commercial value. One point is the denomination of the bonds. The statute seems to provide that one-half of the issue shall be in bonds of \$100 denomination. Ralph points out that if it is necessary to issue \$1,500,000 of the road bonds in denominations of \$100 the premiums will be much less than if the greater part of the issue is in denominations of \$500 and \$1,000. He wants the statute so construed that one-half of the first issue of \$520,000 in \$100 denominations will fill the legal requirement. He estimates that this would mean a gain of \$100,000 in premiums. Another point is the duration of the bonds. Under the law they cannot run more than 20 years, but they can be redeemed at any time within that period. Ralph holds that they would be more desirable as investments, especially for estates and trusts, if they could be issued for a certain number of years and could not be redeemed before that time. He will attempt to have the supreme court fix a schedule of the length of term for which the bonds can be issued without being subject to redemption in the meanwhile. There may be other points also that will be raised when the supreme court begins to consider the case. Meanwhile county highway engineer Elbring and special engineer James C. Travilla are going ahead with the preliminary surveys.

Commission Form Defeated.

West Hoboken, N. J.—Falling short of the required number of votes by some 115 the commission form of government was defeated in West Hoboken's election. By actual count the proposed commission form received 89 votes more than the mayor form, but 30 per cent. of the votes at the last election was required before the new form of government could be adopted.

Administration Ousted.

Paducah, Ky.—The effect that the decision of the state appellate court, ousting the mayor and all city commissioners except commissioner L. A. Worthington, will have will be practically a complete change in the city government officials and employees. Attorneys say the official acts of the ousted officials will not be affected. There is contention over the time the mandate will become effective. State attorney general M. M. Logan, contends the mandate will not issue for thirty days, while local attorneys for the plaintiffs in the ouster suit hold the mandate will issue at once. The ousted officials are arranging to stay the ouster and will probably ask for another hearing before the Court of Appeals. In the meantime the ousted officials would remain in office pending the hearing of the suit.

"All or None" Bid Wins Big Issue.

Baltimore, Md.—Bidding 99.271 for all or none of the \$2,303,400 four per cent city stock offered by the commissioners of finance, the Mercantile Trust and Deposit Company was awarded the entire issue. The price bid was considered very satisfactory by the commissioners and other city officials. This bid is 1.344 higher than that at which \$8,500,000 of city stock was sold in February, 1915. Four million of the stock sold then was at four per cent interest and four million and a half at four and one-half per cent interest. Associated with the Mercantile Trust and Deposit Company in the purchase were Colston, Boyce & Co., Baker, Watts & Co., Nelson, Cook & Co., Stein Bros., Townsend Scott & Son, Owen Daly & Co. and Frazier & Co. The offerings were as follows, all stock bearing four per cent interest: Five hundred thousand dollars of the Annex improvement 1951 loan, \$500,000 paving 1951 loan, \$200,000 water 1958 loan, \$275,000 conduit 1962 loan, \$298,900 dock improvement 1961 loan, \$225,300 new sewerage improvement 1961 loan and \$304,200 schoolhouse 1961 loan.

New Ouster Law in Virginia.

Richmond, Va.—Virginia's new ouster law, under which certain state and municipal officials may be removed from office for failure to enforce laws and for other causes, has gone into effect. According to reports from all parts of the state, edicts have gone forth for the rigid enforcement of all statutes, including the so-called blue law, prohibiting any work on the Sabbath except that "of charity or necessity."

New Fees Add to Treasury.

Toledo, Ohio.—The new fee ordinance for the department of public service is now in effect. Officials estimate that the ordinance, based on last year's activities, should provide \$30,000 to \$50,000 additional revenue annually. A fee for the examination of plats runs from \$10 to \$25, according to the number of lots in each plat. To lay or tap a sewer or drain, the fee is \$3 a day. To open the surface of any public thoroughfare, \$3 for the first two square yards and \$1 for each additional square yard. To run a traction engine or steam shovel over any paved thoroughfare, \$2 for the first mile and \$1 for each additional mile. To construct a vault or areaway under any sidewalk, \$5. Public service department sewer or paving plans or surveys, \$15 to \$30. Approval of such plans privately drawn, \$5. Testing road building material, \$10.

RAPID TRANSIT

Butte Utilities Tied Up.

Butte, Mont.—The street car strike which called out all the men of the railway lines spread to the electricians and linemen of the Montana Power Company and the Mountain States Telephone & Telegraph Company. These companies, and also the water company, were forced to discontinue repairs, so that many services went out of commission every day. The strike spread to the Workmen's Union and affected janitors and building trades members, including carpenters, plumbers, painters, bricklayers and others. The demand is for a \$4 wage scale, and the Employers' Association is using all its resources in the fight. The union men have asked for a Federal investigation of the employers' organization. Meanwhile the jitneys reap a good harvest, the cars having carried about 35,000 passengers a day before they were tied up.

Municipal Car Fight Opens.

San Francisco, Cal.—A red mark on the asphalt at Van Ness avenue and Market street, and a blow with a hammer on a wedge started what is to be a finish fight between the city and the United Railroads to settle for good whether or not the municipality can parallel every foot of the corporation's tracks if it wants to. Foreman Tim McCarthy made the mark and president Tim Reardon of the board of works used the sledge. A United Railroads camera snapped them both. Attorneys William Abbott and William G. Cannon of the United Railroads hurried to the United States district court. Judge Van Fleet issued a temporary restraining order commanding the city to stop the work. That this is to be a battle to the end is agreed by both sides. The question to be tried out is the right of the city to build its tracks where it pleases, without reference to franchises issued to corporations. The United Railroads contends that the provision in its franchises declaring that the city shall not grant a franchise to a competing line for more than five blocks of parallel tracks on any one street binds the city also in its street car enterprises. The company will take the position that it made its investment on the assumption that it held an exclusive franchise for a specified time to operate cars on certain streets, and that to permit the city to invade its territory with competing lines would be confiscation and mean financial ruin to those who invested in the enterprise. The city claims the right to parallel every foot of United track if need be, holding that the five-block provision in the franchises binds the supervisors, if at all, only in granting franchises to competing corporations. The theory will be that the city granted the franchise to what is now the United Railroads to the exclusion of any other similar corporation, but that it

could not by so doing deprive itself of the right to use the street over which the franchise operated. There is besides a state law which permits municipalities to construct street railways upon its streets regardless of the fact that such streets may be occupied by a corporation. It was upon the advice of the city engineer that the city decided to begin the work by day labor rather than by contract, owing to the probability of its being halted by the injunction. As the injunction refers to the whole municipal project on Market from Seventeenth to Third street, the proceedings tie up all extension through the Twin Peaks tunnel and the connections with the Church street line. In the latter, practically completed, the city has a railroad that cannot now be used. The city plans to complete the laying of double tracks all the way on Market street from Kearny to the eastern portal of Twin Peaks tunnel, and to run a connection on Church street from Market street to the present terminus of the municipal line on Church street. This will give the municipality double tracks the entire length of Market street, paralleling the United Railroads, and will connect the Church street and Van Ness avenue lines.

Company Valuation Three Times City's.

Cincinnati, Ohio.—According to Bert L. Baldwin, expert engineer employed by the city to estimate the value of the Cincinnati Traction Company's property, it is worth \$11,969,284.86. The company claims a value of \$35,837,044.53. The state public utilities commission places the valuation at \$24,333,947.36. Mr. Baldwin, after months of research, has delivered his report to Service Director Hornberger in sixteen large volumes. These figures will be used for the city's right for revision of fares to begin before the Public Utilities Commission. The figures include the values of the property used or useful in the operation of cars, including property in Norwood and Cheviot, which are outside the city limits. The "cost now" is estimated at \$16,412,455.31, the depreciation at \$4,449,170.45, giving a "present cost" of \$11,969,284.86.

City to Tax Carfares.

St. Louis, Mo.—The United States supreme court has denied an application for a rehearing in a suit bearing on the validity of an ordinance, passed by the city of St. Louis, requiring the United Railways Company there to pay one mill for every 5-cent fare collected. The litigation began twelve years ago and has been bitterly contested by the railway interests. St. Louis will now realize \$2,860,000 in back taxes, due up to three years ago. Following the passage of the ordinance, the litigation began with the request for an injunction to prevent the collection of the tax. The street railway company lost in the lower federal court and lost on appeal. The city then brought suit to collect the tax and won in the circuit and supreme courts of Missouri. The United States supreme court upheld the opinion of the lower courts last April. The street railway company then asked a rehearing on a writ of error. The court refused the application and sustained the validity of the ordinance. Mayor Edwards and J. A. Harzfeld, city counselor, of Kansas City, both said steps would be taken at once to prepare a similar ordinance for their city and to collect from the Kansas City Railways Company. The street railway company in Kansas City pays nothing to the city except the regular taxes on its holdings. It evaded paying part of its revenue to the city by forcing through a new franchise. The city, prior to the present franchise, received about \$115,000 a year from the company.

Jitney Men Win in Shrewd Move.

New Orleans, La.—A writ of supersedeas has been granted from Huntsville, Ala., by one of the justices of the United States Circuit Court of Appeals for this district. The writ serves to prevent any interference by the city administration until the United States Circuit Court of Appeals convenes after vacation, which will be in October, and meanwhile the jitney men will operate without restriction. In the petition filed before the Federal District Court some time ago by Felix Lutz, a German resident of New Orleans, and three other jitney owners, the Jitney Protective Association took its first step in effecting a very shrewd technical move. When Judge Foster decided

against the plea that Lutz was a German citizen and, as such, was entitled to free and unhampered use of his property according to treaty provisions entered into between the United States and Germany, the jitney men passed their case up to the United States Circuit Court of Appeals. Therein the same plea was made, and on the strength of it the writ of supersedeas was granted. This contention will form the basis of the new fight before that court. If Lutz wins individually the right to operate a jitney, all the members of the association will sign over to his custody their cars, and will operate as employees of his, their automobiles carrying his name. Thus, on a technicality, they hope to beat the city. The organization of a mutual bonding company by the association jitney owners, the stock to be sold exclusively to members of the association, is another part of the scheme to secure the men from interference on the part of the city administration. The men always have contended that it is not the furnishing of bond they object to, but the manner in which the bond must be given, in order to conform with the city ordinance. Their mutual bonding company will furnish bonds for them, and the city can not help accepting them, they contend.

MISCELLANEOUS

San Francisco to Have Municipal Survey.

San Francisco, Cal.—Many property owners are coming to the aid of the Real Estate Board and have subscribed almost the whole of the \$10,000 fund required to pay for the municipal survey, which will be done by experts of the New York bureau of municipal research, under the jurisdiction of the tax committee of the board. The proposed survey has aroused wide interest. The work is to begin at once.

Los Angeles Now Largest City.

Los Angeles, Cal.—The annexation of Westgate and Occidental to the municipality of Los Angeles, ratified by the voters at a recent election, makes Los Angeles the largest municipality in the United States in area. It now has a total area of 337.92 square miles, beating Greater New York with an area of 314.75 square miles into second place; Chicago is third with 198, and Philadelphia fourth, with 129. Los Angeles has a population of about 500,000.

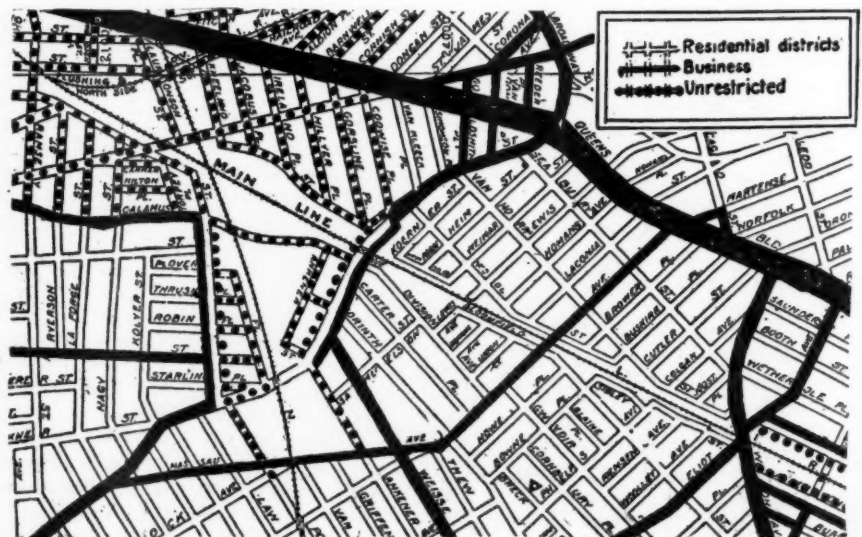
Denied Home Rule in Telephone Regulation.

Detroit, Mich.—The supreme court of Michigan has denied the city of Detroit home rule in handling telephone facilities and rates. This is a temporary defeat for Harry J. Dingeman, corporation counsel, in his fight to keep the Michigan Telephone Company from putting in a metered service in the city. Dingeman had contended that under the "home rule act" Detroit had a right to regulate telephone rates for its residents. The Michigan state railroad commission took an opposite view. There was a deadlock. Dingeman left the hearing and the city officially was not represented at subsequent meetings, though they went on for many days. Otto Kirchner, associate counsel, as representative of the Detroit Board of Commerce, appeared for the city after this. Then Dingeman prepared a brief asking for a writ of prohibition in which he sought to show that the city of Detroit had no province except to appeal to the supreme court. The writ of prohibition is the one denied. The only recourse the city now has is to take the case through the chancery courts. This, Dingeman says, involves bringing into the court every angle of the case and will cost thousands of dollars for the city and the company.

Districting New York.

New York, N. Y.—What will be the most important step yet taken by any American city toward the control of building development will result from the work of the commission on building districts and restrictions. The preliminary report for the five boroughs has been completed and transmitted to the board of estimate which is completing a series of public hearings on the subject. In order to arouse popular interest in the work, the City Club of New York, in cooperation with the Women's City Club, held an exhibition of some of the plans of the commission. There were also shown maps and photographs emphasizing the present conditions of uncontrolled building which are urgently in need of remedy. These illustrated very strikingly the evils of jumbling residential, industrial and commercial buildings on the same street and brought out convincingly the value of the districting plans. Contrasted with New York conditions were a number of photographs and maps illustrating orderly zoning plans in England and Germany. The City Club has been working actively in this field through its committee on city planning and it has published "A Plea for the Preservation of Our Small Parks as Neighborhood Centers" and a criticism of the commission's plans in which it asked that the restrictions be made more drastic.

The plans provide for residential, business and industrial districts and for the limitation of the height of buildings and the area of the lot that may be covered. They will stop haphazard, heterogeneous development and substitute a common sense plan of building control. The commission has taken up the work begun by the heights of buildings commission appointed by the board of estimate in 1913. Following the report of that commission in 1914, the necessary legislation was promptly secured and the present commission appointed by the board of estimate to work out and recommend a comprehensive districting plan. Edward M. Bassett, formerly chairman of the heights of buildings commission, is now chairman of the districting commission. Its membership contains leading representatives of the real estate, lending and civic interests of the city. Walter Stabler, comptroller of the Metropolitan Life Insurance Company, has been very active in the commission's work, serving as chairman of the Manhattan sub-committee. The commission's secretary, Robert H. Whitten, and its consultant, George B. Ford, have had charge of the expert work in the elaboration of the tentative plans. Herbert S. Swan has served as investigator, John P. Fox as transit expert and George W. Tuttle and Edward M. Law as engineers. The commission says that "the bigger a city grows the more essential a plan becomes. Traffic problems, the congestion of population, the necessity for an intensive use of land, the magnitude of property values affected, make the control of building development more and more essential to the health, comfort and welfare of the city and its



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DISTRICTING A PART OF BROOKLYN BLOCK BY BLOCK.

inhabitants. New York City has certainly reached a point beyond which continued unplanned growth cannot take place without courting social and economic disaster. Through haphazard construction and invasion by inappropriate uses the capital values of large areas have been greatly impaired. This destruction of capital value not only in the central commercial and industrial center of Manhattan but also throughout the residential sections of the five boroughs has reached huge proportions. It does not stop with the owners in the areas immediately affected but is reflected in depressed values throughout the city. Market value for investment purposes is always affected by the hazard of the business. Whatever the capitalized amount that may properly be charged to the economic depreciation hazard, it is certainly a huge burden and one that affects not only the individual owners of real estate throughout the city but the savings and other large lending institutions, the municipal finances and the general welfare and prosperity of the whole city. Permanence and stability can only be secured by a far-sighted building plan that will harmonize the private interests of owners and the health, safety and convenience of the public."

The commission, however, is working under very repressing limitations—it seeks to divide New York so that the value of no piece of property is decreased. It wishes, mostly, as far as possible within this limitation, to preserve the residential districts throughout the city. This accounts largely for the lack of constructive planning for the undeveloped sections which some critics have attributed to the work. The accompanying illustration shows a small section of Brooklyn as it has been mapped out for regulation for use of buildings. Residential streets are restricted against industry and business and business streets against industry.

Saloon to Pay for Waterworks.

Altoona, Wis.—Four saloons of this city will have to go out of business on July 1 and their places will be taken by a municipally-owned saloon. From the profits of this enterprise the city plans to build a municipal waterworks.

Recreation Commission Appointed.

Wilkes-Barre, Pa.—Wilkes-Barre's first municipal recreation commission has now been organized. Six of the seven members were selected, three representing the school board and composed of the property committee of that body—Dr. Boyd Dodson, Percy A. Brown and Richard A. Ward—and the other three named by city council—Ernest G. Smith, Isidor Coons and Andrew Rubiscsak. These six named the seventh member. The commission will have charge of all municipal sports and playground activities. It is the outgrowth of several individual bodies such as the Playground Association, the City Recreation Committee, the School Playground Committee, the Chamber of Commerce and Rotary Club recreation committees and other similar organizations. It is believed that the new commission will be empowered to expend public funds for the advancement of wholesome and constructive recreation for the community, and establish a system whereby recreation will be directed at all seasons of the year under capable instructors.

City's Buildings Are Popular.

New York, N. Y.—Ralph Folks, commissioner of public works, in a report to Borough President Marks covering the bureau of public buildings and offices for 1915, shows that fifty million people, or a number equal to about one-half of the entire population of the United States, annually use the seventy-five buildings now maintained and operated by the Manhattan borough president. These buildings, valued at \$72,000,000, contain about two and one-half million square feet of floor area, or 56¼ acres. At the end of 1915, the Municipal Building, the largest under the care of the Borough President, was housing thirty-six city departments and bureaus. Two of the city's model public buildings were completed and opened to the public last year—the new Children's Court and a new public bath. One of the chief activities of the bureau is the maintenance of the thirteen interior baths and the six floating baths, which latter are used only in the summer months. The superin-

LEGAL NEWS

A Summary and Notes of Recent Decisions— Rulings of Interest to Municipalities

Use of Street—"Liberty."

Kelly v. James.—As applied to the right of a person to use a public street, the word "liberty" means freedom from restraint, under conditions essential to the equal enjoyment of the same right by others, as liberty does not mean license, but freedom regulated by law.—Supreme Court of South Dakota, 157 N. W. R., 990.

Injuries on Sidewalk—Liability of City.

Dahmer v. City of Meridian et al.—A city was not liable for injuries to a sidewalk pedestrian, upon whom a billboard was blown which was on private premises and not obviously dangerous to pedestrians; the city having no notice that the board was defective or dangerous and it appearing to be reasonably safe.—Supreme Court of Mississippi, 71 S. R., 321.

Care of Streets.

Levine v. City of Pittsburgh.—In performing its duty to maintain its highways in a safe condition, a city is bound to use ordinary care and diligence, but not to provide against the possibility of an accident, and a mere error in judgment in laying out the way or adopting the plan would not be negligence.—Supreme Court of Pennsylvania, 97 A. R., 392.

Extension of City Limits—Interest of Inhabitants.

Thomas et al v. Town of Long Beach.—In determining whether an extension to the corporate limits of a town is reasonable, the question is whether the interests of the inhabitants of the town as it would remain if the territory were to be excluded, and of the inhabitants of the territory sought to be included, will be conserved by its retention within the town's corporate limits.—Supreme Court of Mississippi, Division A, 71 S. R., 570.

Balance Due on Contract—Price.

Molloy v. Village of Briarcliff Manor.—In an action for the balance due on a contract with defendant for laying pavement, etc., where a large part of the balance was for additional work and material, the agreement between the parties containing provisions as to the performance of the work originally contemplated, and fixing the price at which on the option of the defendant work and material might be added or subtracted from that originally provided for, was admissible to show the price at which such work and material should be paid for, notwithstanding the action had been brought on the theory that the contract provided for compensation on the lump sum basis.—Court of Appeals of New York, 112 N. E. R., 429.

Ordinances—Power of City—Explosives.

Killebrew v. Mayor, etc., of City of Wrightsville.—The judge of the superior court did not err in refusing to sanction the certiorari. The municipality had authority to pass the ordinance under which the defendant was convicted, and the fact that he had the right to conduct business in any city or county of the state of Georgia, without paying a license for the privilege of so doing, under the provisions of section 1888 of the Civil Code of 1910, did not authorize him to conduct within the limits of a city a business which had been prohibited by proper ordinance, in the exercise of the police power inherent in the municipality. (a) For the protection of lives and property a municipality has authority, under the general welfare clause of its charter, to prohibit the sale or handling of dangerous explosives within its limits.—Court of Appeals of Georgia, 88 S. E. R., 708.

tendent reports that in 1915 the total number of baths taken in both the interior and the floating baths was 8,703,837, the largest number in the history of the bureau. The cost per bath in the floating baths was less than 1½ cents.

NEWS OF THE SOCIETIES

Calendar of Meetings.

June 27-30.—IOWA STATE FIREMEN'S ASSOCIATION. Annual convention, De Witt, Ia.

June 27-30.—AMERICAN SOCIETY OF CIVIL ENGINEERS. Annual meeting, Pittsburgh, Pa. Secretary, Charles Warren Hunt, 220 West 57th St., New York, N. Y.

June 27-30.—AMERICAN SOCIETY FOR TESTING MATERIALS. Annual meeting, Atlantic City, N. J. Secretary, Edgar Marburg, University of Pennsylvania, Philadelphia, Pa.

June 27-30.—GOVERNORS' CONFERENCE. Annual meeting, Salt Lake City, Utah. Secretary, M. C. Riley, Washington Building, Madison, Wis.

June 28-30.—MICHIGAN LEAGUE OF MUNICIPALITIES. Annual meeting, Battle Creek, Mich.

June 28-30.—NEW YORK STATE ASSOCIATION OF COUNTY HIGHWAY SUPERINTENDENTS. Annual Convention, Glens Falls, N. Y.

July 3-5.—MONTANA STATE FIREMEN'S ASSOCIATION. Annual convention, Butte, Mont.

July 5-6.—GEORGIA STATE ASSOCIATION OF CHIEFS OF POLICE AND MARSHALS. Annual convention, Savannah, Ga. Secretary, J. P. Griffin, West Point, Ga.

July 11-13.—MUNICIPAL LEAGUE OF INDIANA. Annual meeting, Goshen, Ind.

July 13-15.—MONTANA STATE AUTOMOBILE AND GOOD ROADS ASSOCIATION. Annual Convention, Anaconda, Mont.

July 17-21.—NORTH CAROLINA STATE FIREMEN'S ASSOCIATION. Annual convention, Raleigh, N. C.

July 18-20.—MICHIGAN STATE FIREMEN'S ASSOCIATION. Annual convention, Detroit, Mich.

July 20-22.—SOUTH CAROLINA STATE FIREMEN'S ASSOCIATION. Annual Convention, Ogdensburg, S. C.

July 25-27.—ILLINOIS FIREMEN'S ASSOCIATION. Annual Parade and Tournament, Kankakee, Ill.

Aug. 7-9.—CITY MARSHALS' AND POLICE CHIEFS' UNION OF TEXAS. Annual convention, Houston, Tex.

Aug. 8-10.—OHIO POLICE CHIEFS' ASSOCIATION. Annual convention, Cedar Point, O. Secretary, Ex-Chief James Stamberger, E. Cleveland, O.

Aug. 8-11.—DOMINION ASSOCIATION OF FIRE CHIEFS. Annual convention, Windsor, Ont. Secretary, James Armstrong, Kingston, Ont.

Aug. 21-27.—PACIFIC COAST ASSOCIATION OF FIRE CHIEFS. Annual convention, San Diego, Cal.

Aug. 22-25.—INTERNATIONAL ASSOCIATION OF MUNICIPAL ELECTRICIANS. Annual convention, Baltimore, Md. Secretary, Clarence R. George.

Aug. 28-31.—NATIONAL TAX ASSOCIATION. Tenth annual conference, Indianapolis, Ind.

Aug. 29-31.—LEAGUE OF CITIES OF THIRD CLASS IN PENNSYLVANIA. Seventeenth Annual Convention, Johnstown, Pa. Secretary, Fred H. Gates, City Clerk, Wilkes-Barre, Pa.

Aug. 29-Sept. 1.—INTERNATIONAL ASSOCIATION OF FIRE ENGINEERS. Annual convention, Providence, R. I. Secretary, James McFall, Roanoke, Va.

Sept. 4-8.—SOUTHERN APPALACHIAN GOOD ROADS ASSOCIATION. Ninth annual convention, Lexington, Ky. Secretary, Dr. Joseph Hyde Pratt, Chapel Hill, N. C.

Sept. 6-9.—LEAGUE OF AMERICAN MUNICIPALITIES. Annual convention, Newark, N. J.

Sept. 13-15.—NEW ENGLAND WATER WORKS ASSOCIATION. Convention, Portland, Me. Secretary, Willard Kent, Narragansett Pier, R. I.

Sept. 13-15.—WASHINGTON STATE ASSOCIATION OF COUNTY COMMISSIONERS. Annual meeting, Tacoma, Wash. Secretary, J. C. Hansen, Port Angeles, Wash.

Sept. 20-22.—MASSACHUSETTS STATE FIREMEN'S ASSOCIATION. Annual con-

vention, Gloucester, Mass. Secretary, D. Arthur. Burt.

Oct. 9-11.—NATIONAL HOUSING ASSOCIATION. Annual meeting, Providence, R. I. Secretary, Lawrence Veiller, 105 East 22d St., New York City.

Oct. 9-13.—AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENTS. Twenty-third Annual Convention, Robert Treat Hotel, Newark, N. J. Secretary, Charles Carroll Brown, 702 Wulsin Building, Indianapolis, Ind.

Oct. 16-21.—NATIONAL SAFETY COUNCIL. Fifth Annual Safety Congress, Detroit, Mich. Secretary, W. H. Cameron, Continental and Commercial Bank, Chicago, Ill.

Oct. 24-27.—AMERICAN PUBLIC HEALTH ASSOCIATION. Annual Convention, Cincinnati, O. Secretary, Prof. Selkirk M. Gunn, Boston, Mass.

Nov. 15-16.—NATIONAL CONFERENCE ON UNIVERSITIES AND PUBLIC SERVICE. Third annual conference, Philadelphia, Pa. Secretary, Edward A. Fitzpatrick, Box 380, Madison, Wis.

Dec. 27-30.—AMERICAN ECONOMIC ASSOCIATION. Annual meeting, Columbus, Ohio. Secretary, A. A. Young, Ithaca, N. Y.

Dec. 27-30.—AMERICAN STATISTICAL ASSOCIATION. Annual meeting, Columbus, O. Secretary, Carroll W. Doten, 491 Boylston street, Boston, Mass.

Feb. 5-12, 1917.—AMERICAN ROAD BUILDERS' ASSOCIATION. Seventh American Good Roads Congress and Eighth National Good Roads Show, Mechanics' Hall, Boston, Mass. Secretary, E. L. Powers, 150 Nassau street, New York City.

New England Waterworks Association.

The 1917 convention will be held at Portland, Me., Sept. 13, 14 and 15. The convention will be held in the new municipal building where the main auditorium has been reserved for the exhibits; this room provides about half an acre of floor space, so ample room is reserved for the display. The exhibit hall will be used by the delegates and ladies as a social and lounging room, while not in actual attendance at the sessions. Informal teas and dancing in exhibit hall, afternoon and evening. Special preparations are being made for the arranging and decorating of spaces, and no effort will be spared by the committee in making this feature of the convention one not easily forgotten.

It is proposed to have five sessions for the presentation of papers. The program cannot yet be definitely announced, but the convention will be greeted by the Governor of Maine and the Mayor of Portland, and it is expected that Admiral Peary, who occupies one of the islands in Casco Bay, will address the association. The program will include papers and discussions on subjects of great practical importance to superintendents, and valuable papers on water works accounting will be presented.

The exhibit of water works appliances will be in charge of William F. Woodburn, who has successfully managed previous exhibits and it is expected that this will be more complete than any which have ever been held. The exhibit will be in the Auditorium in City Hall, where floor space of more than a quarter of an acre is available. The auditorium contains the

memorial organ presented to the city by H. K. Curtis of Philadelphia, and frequent recitals on this organ will be given. In addition to the organ recitals there will be other music in the auditorium and an opportunity for informal dancing.

Exhibits should be sent to Chas. R. Harris, Exhibit Committee, care Portland Water District, Portland, Me., via Maine Steamship Line, Eastern Steamship Corporation, Pier 19, North River, New York.

Conference of New York State Sanitary and Health Officers.

With upwards of one thousand health officers from all parts of New York State in attendance, the sixteenth annual conference of sanitary officers of the state was held at Saratoga Springs, N. Y., June 6-8. Dr. Herman M. Biggs, state commissioner of health, opened the meeting and in an address reviewed the work during the past two years. Dr. Biggs declared that some of the health officers had been lax in reporting communicable diseases and that in the future the law would be rigidly enforced, even if some of the health officers had to be punished. The commissioner said with the laboratory facilities at the state department in Albany, there was no reason for health officers not getting a quick diagnosis of suspected cases. He said that during the year 6,000 examinations were made of sputum for tuberculosis, whereas there ought to be from 50,000 to 75,000 examinations of suspected cases. Dr. Biggs said that owing to the efficient work of the physicians the death rate in the state had been lowered until it is the lowest in the country.

Dr. George W. Goler, health officer of the city of Rochester, created a stir when he read a paper on "Proper and Effective Disinfection of Premises." He declared disinfection was a sham and a humbug and that it did no good to fumigate premises. Dr. Goler gave a long argument to support his claim. He quoted from ancient history and declared that the city of Rochester had not disinfected houses in the last three years and that communicable diseases had decreased about 30 per cent.

The probability that within a short time the medical profession will be able to assure the public as much immunity against smallpox, featured the address of Dr. William H. Park of New York City.

Dr. Park assured the physicians that there is every reason to expect that with a wider use of an immunizing agent, there will be a great reduction in the number of diphtheria cases and ultimately the disease may be eradicated.

Dr. A. B. Wadsworth of the state department of health told the health officers of the work being done by the division of laboratories. He pointed out that there have been remarkable increases in the number of specimens examined and the amounts of vaccines and anti-toxins distributed.

The second days' session of the

health officers' conference was devoted to a discussion of milk and food products. Dr. Linsley R. Williams, deputy commissioner of health, declared that raw milk is responsible for more sickness than any other article of food and that complete safety from milk-borne disease cannot be secured unless the milk is properly pasturized. Dr. Williams supported his assertion with a view of epidemics in New York State, which have been traced to milk, saying that the investigations of the department have conclusively proven about 800 cases of typhoid fever, diphtheria and septic sore throat with 37 deaths to be traced to milk within a period of 18 months.

Dr. Henry L. K. Shaw of Albany,

who is a director of the division of child hygiene, spoke on "The Importance of Clean and Safe Milk." Dr. Shaw's address was the nature of a recital of his experiences in conducting a dairy farm. He advocated the pasteurization of milk to make it pure.

Dr. Edward K. Dunham of Bellevue Medical College, gave an illustrated lecture on "Food Values and Costs." Dr. F. M. Meader spoke on the detection and control of typhoid carriers. Theodore Horton, a sanitary engineer, took up the subject of typhoid from the standpoint of water supplies.

The last day of the conference, Thursday, was given over to the subject of public health in the schools. Dr.

(Continued on page 910.)

PROBLEMS CITIES ARE STUDYING WITH EXPERTS

In improving its SEWAGE DISPOSAL plant, Hobart, N. Y., has retained Hansen & Coulter, 2 Rector street, New York City, as consulting engineers to investigate and report.

A modern SEWER SYSTEM is one of the improvements planned by the city of Lockhart, Tex., and Henry Exall Elrod, Southwestern Life Building, Dallas, Tex., has been retained as consulting engineer.

A SEWERAGE SYSTEM improvement having been decided upon by the city of Wadena, Minn., John Wilson, 300 First National Bank Building, Duluth, Minn., was appointed consulting engineer to prepare plans and specifications.

The municipal POWER PLANT of the city of Dunkirk, N. Y., has a greater demand than it can supply and the advisability of increasing the installation or of buying power from the Niagara & Erie Power Company is to be investigated by Roy Husselman, representing F. W. Ballard, of Cleveland, O.

Local commercial organizations last fall decided the two cities of Bristol, Va., and Bristol, Tenn., would soon reach the limit of the capacity of their WATER SUPPLY and they asked the city officials to investigate the needs of the future. The firm of Knight & Quayl, Chattanooga, Tenn., was appointed as consulting engineers and a report has just been made.

WATERWORKS are being planned by the city of Covington, La.; SEWER SYSTEMS are being planned by New Iberia, La., and McComb City, Miss. Waterworks and sewer systems are being planned by Amite, Independence, De Ridder and Oakdale, La. All these projects, totaling in estimated cost to \$430,000, are under the supervision of Xavier A. Kramer, consulting engineer, Magnolia, Miss.

A SEWERAGE and sewage disposal system for the town of Stanton, Ia., is being designed by Theo. S. DeLay, Creston, Ia.

The city of Jamestown, N. Dak., realizing the need of a new SEWAGE PLANT, appointed L. P. Wolff, consulting engineer, of St. Paul, Minn., to prepare plans, which he has now completed.

The city of Tulsa, Okla., is considering the urgent need of an adequate WATER SUPPLY and the possible sources, costs and plans for a filtration system are to be investigated by E. M. Stevens, consulting engineer, of Kansas City, Kan.

The city of Williamsport, Pa., is making an investigation of the local WATER company as to cost of construction, maintenance and finances. It is also planning to build a new SEWAGE DISPOSAL plant. Farley Gannett, consulting engineer of Harrisburg, Pa., has been retained as expert on both these propositions.

With the state board of health threatening fines and many of the sewers in the city in bad condition, the city officials of Toledo, O., finally decided on a general survey of the SEWERAGE SYSTEM. Watson G. Harmon, of the sanitary experiment station of the engineering school of the University of Michigan, was appointed expert to conduct the survey and make recommendations.

Following state legislation on the construction of a BRIDGE spanning the Mohawk river at Schenectady, N. Y., a commission has been appointed to examine sites and prepare plans for the "Great Western Gateway." State engineer Frank M. Williams, appointed William Barclay Parsons, of New York City, and Mayor Lunn of Schenectady appointed Richard Sutton Buck to represent them as engineers on the commission.

PERSONALS

Allen, Captain Charles J., secretary and executive officer of the New Jersey state board of tenement house supervision, died on June 17 at his home in Newark after a lengthy illness. Captain Allen was born in New York and became a journalist on several Newark newspapers. He was also in the National Guard. In 1903 he was appointed to his position by Governor Murphy. Captain Allen was a well-known authority in his field, having worked out the tenement house law, organized his department and administered it very vigorously and effectively in spite of powerful opposition from many reactionary sources.

Dickson, Dr. Samuel A., mayor of Shreveport, La., died suddenly at St. Louis while on his way to attend the American Waterworks convention at New York.

Barker, Edward, has been elected a member of the Fall River, Mass., water commission.

Beach, C. E., emergency signaling engineer, Security Mutual Building, Birmingham, N. Y., is devoting his practice, based on fifteen years' experience, to fire alarm and police telegraph emergency signaling systems, including surveys, planning of systems and extensions, parations of specifications, supervision of contracts, tests, re-establishment of service after breakdowns, locating defects and other phases.

Brown, Chester A., has been elected city manager of Sherrill, N. Y.

Gary, Sam G., has been elected city manager of Denton, Tex., for a two-year term.

Higham, C., was elected chief engineer at the annual election of the Middletown, N. Y., fire department.

Johnson, A. N., for many years Illinois state highway engineer, and now consulting highway engineer for the Portland Cement Association, has just been appointed chairman of a sub-committee of Committee D-4, of the American Society for Testing Materials. This sub-committee is to investigate and report on tests for concrete aggregates in concrete roads. Mr. Johnson's committee is to hold meetings until June 29, on which date it will make its first report at the Atlantic City meeting of the American Society for Testing Materials.

Mottet, Frederic, has been elected a member of the Metropolitan Park Board of Tacoma, Wash.

Stotesbury, E. T., has been re-elected president of the Fairmount Park commissioners of Philadelphia.

Viett, William E., has resigned as chief of the Washington, D. C. terminal police force. David Hamilton has been appointed temporary chief.

Wysor, Harry R., has been elected president of the Muncie, Ind., park board.

Zabriskie, B. J., has been appointed chief of police of El Paso, Tex., succeeding Don Johnson, resigned.

NEW APPLIANCES

Describing New Machinery, Apparatus, Materials and Methods and Recent Interesting Installations.

ELEVATING GRADER

Of All-Steel Frame Construction for Road Work.

The Stroud "Little Giant" elevating grader is made with an all-steel frame and is especially well adapted to road work by state, county and township road officials and by contractors. The machine is guaranteed to excavate and place in embankment one thousand cubic yards of earth in ten hours of actual work or load 500 to 600 wagons per day wherever stones or roots are not of sufficient size to impede plowing and where the ground is free from frost and is firm and dry enough to support machine and teams.

The frame is built of 8-inch channels. It is designed to be wide enough to have strength, thin enough to have flexibility and strong enough to withstand any strain on side hills or in ruts and deep furrows. The turn-buckle and side-brace construction on the right-hand side that goes down under the carrier eliminates the possibility of settling down or stretching out. The upper carrier is extended by a patent method and one man only is needed to extend it to take up slack.

The plow beam has no castings—only forgings being used. The foot levers under the plow holder's feet enable him to handle not only the carrier up and down, but the plow up and down—both at the same time. The plow points are of a make to stand the hardest wear.

The pan cleaner is operated by an eccentric on the inside of the rear left-hand wheel. This eccentric gives a reciprocal motion to a series of blades or knives that cleans the pan or cat-

hole just behind the iron roller at the lower end of the lower carrier. This removal of the dirt greatly lengthens the life of the belt as stones cannot get in around the lower roller and punch holes in the belt.

The pole of the pushcart is made of 4x6 white oak. The crank used by the pushcart driver for steering the cart is a one-hand control. The wheels of the cart are made extra heavy to stand wear. The tongue is made of white oak, well ironed and with two rings at the end to allow proper adjustments for leaders. The cross-brace at the rear end of the tongue prevents sagging or moving from side to side. The driver's seat is high and convenient for access and control.

The accompanying illustration shows the "Little Giant" elevating grader. It is made by T. F. Stroud & Company, Omaha, Neb.

EXTENSION DEVICE

For Increasing Loading Space on Ford Trucks.

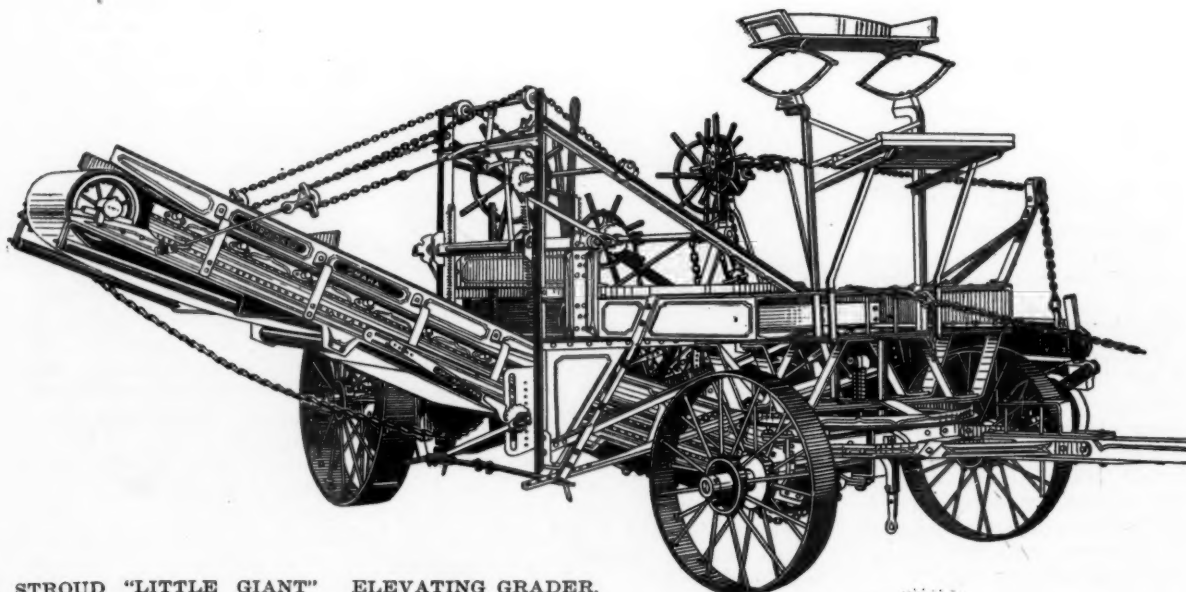
The use of a light truck such as a one-ton Ford is often inconvenient in a number of services where the load may be light but bulky—not heavy enough to warrant a heavier truck but giving too much overhang for convenience, safety and appearance. In order to overcome the difficulties of this situation without the necessity of cutting the frame, welding and riveting with consequent weakening of the construction and loss of power, the H-D extension has been developed.

This has a front and rear extension which enable the conversion of the ordinary light car into one with the

proper wheelbase, increasing the strength and allowing the use of a longer body. The chassis is not cut, drilled, defaced or marred in any way and the extension can be installed by any ordinary mechanic in half a day. The extension can easily be removed and transferred to a new chassis. The extension equipment consists of a frame section, a propeller shaft extension, a tubular propeller shaft housing extension and the necessary equipment for lengthening brake rods, nuts, bolts, etc.

The change does not weaken the chassis and is not intended to increase the normal weight-carrying capacity. The extension is made in two sizes: one to increase the wheelbase by 15 inches, from 100 to 115, giving a loading space back of the driver's seat of 72 inches, and the other a loading space of 90 inches by extending the wheelbase 30 inches.

The Olson Unit is a device for converting the Ford chassis into a one-ton truck by the use of a special body spring and steel truck wheel and housing to replace the regular rear wheel. The body spring pivots on a spring pin set into a bracket of the drum hub housing. The principle utilized is the carrying of the load weight directly onto the hub of a steel truck wheel by means of the hub housing, bracket and auxiliary springs. The hub housing is equipped with a set of high efficiency roller bearings into which the slotted hub of the steel wheel fits. Auxiliary radius rods neutralize the load strain and side sway. While the assembled unit has been tested to a load capacity of five tons, it is intended only for use for one-ton loads under ordinary load



STROUD "LITTLE GIANT" ELEVATING GRADER.

and road conditions. A very useful truck can be made from a Ford chassis with the Olson converting unit and a dump type body.

The accompanying illustration shows the H-D extension. The manufacturer of this extension and the Eastern distributor of the Olson Unit is the Hayes-Diefenderfer Company, Inc., 237 West 55th street, New York City.

INDUSTRIAL NEWS

Infringement of Road Patents.—On June 19 the U. S. district court for the Eastern District of Pennsylvania enjoined the carrying out of two contracts for constructing "Filbertine" for the Pennsylvania state highway department, which contracts had been awarded September 15, 1915. This was the result of a suit brought by Warren Brothers Company claiming that the pavement would infringe their patents, which claim was upheld. A new anticipation claim set up by the defendants was not allowed.

Prize for Road Studies.—A prize of \$100, offered by the **Barber Asphalt Paving Company** to students of highway engineering at Columbia University, has been awarded to Mortimer L. Neinken, of Brooklyn, for an exhaustive study on the "Comparison and Selection of Roads and Pavements."

Suit on Gasoline Pump Patents.—Judge Carpenter, presiding in the United States district court in Chicago, has entered an order in the case of S. F. Bowser & Company, Inc., against the Wayne Oil Tank & Pump Co. for infringement of their patent on a dispensing apparatus issued August 25, 1914, denying the latter's motion to dismiss the case and ordering the Wayne company to answer the Bowser company's complaint within thirty days.

This patent covers the equipment generally known as curb gasoline pumps which have in the past few years had such a large sale throughout the country, and accordingly the development of this case now pending in the courts is of great interest to thousands of purchasers of this class of equipment.

Handbook on Concrete Roads.—The Kahn road book, of 128 pages, has just been published by the **Trussed Concrete Steel Company**, Youngstown, O., and is devoted to useful information and illustrations on permanent concrete road construction. The large number of photographs of completed roads and those during construction add interest to the reading pages. The first part of the book contains a general historical review of concrete pavements, with detailed information regarding particular sections such as Wayne county, Mich., and surrounding suburbs. The reports of road commissioners are quoted on the satisfaction of the roads and on questions of maintenance. Tables are shown giving cost data as well as summary of yardage and mileage throughout the country. The reinforcing of concrete pavements is freely discussed, and information on Kahn Road Mesh is included. The necessity and advantage of expansion joints with the necessity of protecting the edges occupy another section of the book, including in it practical information in regard to Kahn Armor Plates and Installing Device.

Complete specifications with interesting illustrations on concrete highways occupy the next section of the book. The one-course concrete highway, the one-course concrete street pavement and the two-course concrete street pavement are covered by these specifications. Diagrams covering templates, bridges, etc., are included. Of interest in connection with pavement construction are concrete curbs with methods

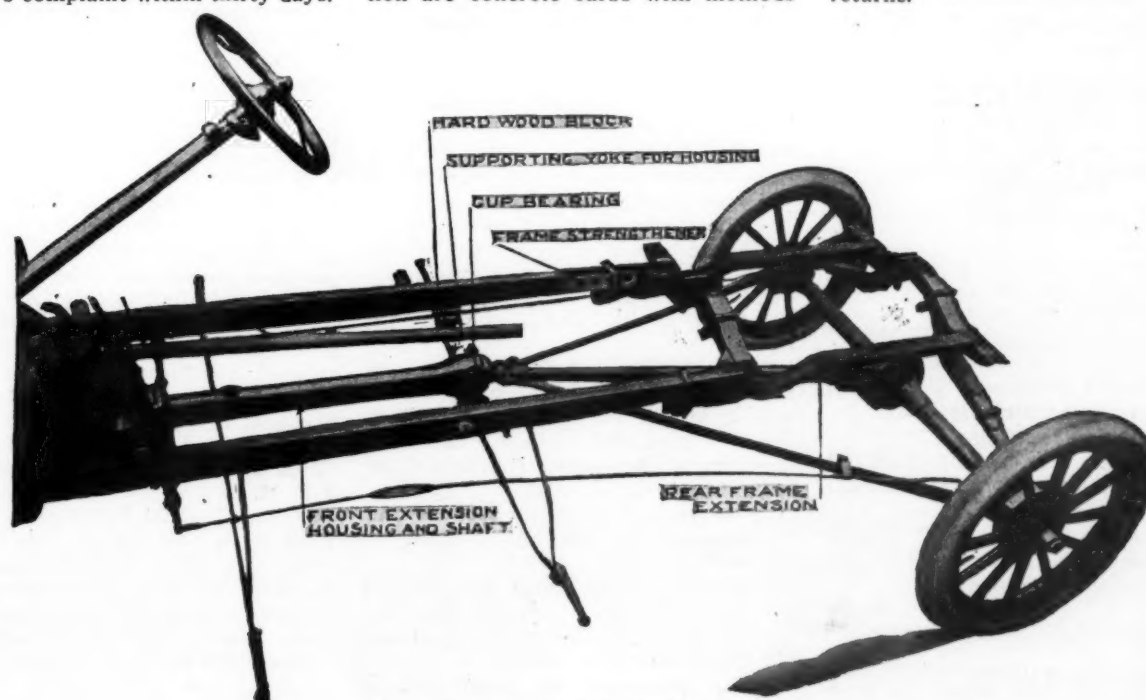
of protecting the edges and the installation of these Curb Bars, also the concrete culverts, bridge floors, etc. This information, together with tables giving quantities of materials for concrete and mortar, are included in the general Kahn road book.

The Kahn road book is issued primarily for engineers and contractors interested in pavement and road construction, including city engineers, contractors, county engineers, road commissioners, etc. To such persons the Kahn road book is sent on request on addressing the Trussed Concrete Steel Company, Youngstown, O.

The National Water Main Cleaning Company, 50 Church street, New York City, has just published a new booklet entitled "The Cleaning of Water Mains" which describes and illustrates the causes and effects of dirty mains and the methods of removing them. The efficacy of the National method is forcibly shown in "before and after" photographs and a long list of cities where mains have been cleaned and the results obtained. The economy of cleaning is strikingly explained with convincing figures.

Cast Iron Pipe Manufacture.

A preliminary statement of the general results of the 1914 census of manufactures with respect to the cast-iron pipe industry has been issued by Director Sam L. Rogers, of the Bureau of the Census, Department of Commerce. It consists of a statement of the quantities and values of the various classes of cast-iron pipe and fittings manufactured, prepared under the direction of Mr. William M. Steuart, chief statistician for manufactures. The figures are preliminary and are subject to such change and correction as may become necessary upon further examination of the original returns.



H-D EXTENSION FOR FORD TRUCKS.

Reports were received from 69 establishments that manufactured cast-iron pipe in 1914, the total products of which for the year were valued at \$27,574,773. Of these 69 establishments, the principal business of 61 was the manufacture of cast-iron pipe and fittings, while the remaining 8, which were engaged primarily in other lines of manufacture, produced cast-iron pipe as a subsidiary product. The statistics given in the text of this summary cover the production of the entire 69 establishments.

At the census of 1909 there were reported 52 establishments, with products valued at \$29,153,723, but detailed statistics of products are not available. The number of establishments in 1914 was greater by 9 than the number reported in 1909, but the total value of products decreased by 9.6 per cent. during the five-year period.

The cast-iron pipe product of 1914 comprised 1,092,208 net tons, valued at \$25,391,714, consisting of 880,556 tons of gas and water pipe and fittings, valued at \$19,218,006, and 211,652 tons of soil and plumbers' pipe and fittings, valued at \$6,173,708. The gas and water pipe output was made up of 802,967 tons of bell and spigot pipe, valued at \$16,228,587; 25,192 tons of flanged pipe, valued at \$645,707; 12,011 tons of culvert pipe, valued at \$246,527; and 40,386 tons of fittings, valued at \$2,097,185. In addition there were produced 26,199 tons of castings other than pipe and fittings, valued at \$741,381, and products other than castings, valued at \$1,441,678.

Of the 69 establishments reported for 1914, 20 were located in Alabama, 10 in Pennsylvania, 9 in New Jersey, 7 in Ohio, 4 in New York, 3 in Michigan, 3 in Tennessee, 3 in Virginia, 2 in Illinois, 2 in Indiana, and 1 each in Colorado, Georgia, Maryland, Massachusetts, North Carolina and Oregon.

The comparative statistics for 1914 and 1909 are summarized in the following statement:

MANUFACTURE OF CAST-IRON PIPE —COMPARATIVE STATISTICS 1914 and 1909.

(Tons of 2,000 pounds.)

ESTABLISHMENTS AND VALUE OF PRODUCTS.

Number of establishments:	
1914	*61
1909	52
Per cent of increase....	17.3
Total value of products:	
1914	*\$26,546,090
1909	\$29,153,723
Per cent of decrease....	9.6

PRODUCTS IN DETAIL, 1914.

Cast-iron pipe and fittings:	
Tons	*1,052,601
Value	*\$24,363,031
Gas and water pipe—	
Tons	866,936
Value	\$18,862,835
Bell and spigot pipe—	
Tons	796,694
Value	\$16,063,374

*In addition, 8 establishments engaged primarily in the manufacture of products other than cast-iron pipe made 38,707 tons of cast-iron pipe and fittings, valued at \$1,028,683.

Flanged pipe—	
Tons	19,883
Value	\$493,047
Culvert pipe—	
Tons	10,952
Value	\$245,452
Fittings—	
Tons	39,407
Value	\$2,060,962
Soil and plumbers' pipe and fittings—	
Tons	185,565
Value	\$5,500,196
All other castings:	
Tons	26,199
Value	\$741,381
All other products, value..	\$1,441,678

Wire Industry.—In the census year 1914 the value of products in the wire industry was \$172,600,587, a decrease of \$7,482,935 as compared with the census year 1909. In 1914 reports were received from 98 wire-drawing establishments and in 1909 from 93 establishments.

NEWS OF THE SOCIETIES

(Continued from page 878.)

William A. Howe opened the session with a narration of results obtained by physical examination of school children, and declared that a very large percentage of children who are described as backward in their studies are so only because of ill health. Dr. John A. Smith described methods for controlling communicable disease in schools, and Dr. Frank A. Overton took up the relation of enlarged tonsils and adenoids to the health of school children. Miss Josephine Durkee concluded the program with an address on public health nursing and its influence on the public health. Miss Durkee has just concluded an exhaustive investigation of public health nursing in the state.

South Carolina State Firemen's Association.

Subjects on which addresses will be delivered at the annual convention of the South Carolina State Firemen's Association to be held at Orangeburg on July 20, 21 and 22, have been selected and announced by the various speakers. The programme is one of particular interest and benefit to the firemen of the state, and it is believed that much help will be received from these speeches. Following are the addresses to be delivered:

"The Development of the Fire Alarm in the United States and the Most Economic Means of Installing Same in Small Cities and Towns," by representative of Gamewell Fire Alarm Company, Chicago.

"Fire Hose, Its Proper Care and Treatment," by Chief J. V. Elgin, of Abbeville.

"How to Improve Our Fire Service So That Property Owners May Get Better Rates of Insurance," by Chief L. C. Wharton of Union.

"The Necessity of Interchanging Couplings," by Chief W. J. May of Columbia.

"Fire Detection," by Aero Fire Alarm Company, of New York.

"The Advantage of the Smoke Helmet to the Firemen, and a General Explanation of Same," by Chief Louis Behrens of Charleston.

"The Value of Our Tournaments," by Chief R. E. Wilder of Sumter.

"Benefits of Inspection of Buildings and Their Condition by Fire Departments, as an Added Means of Fire Prevention," by Chief A. Thene of Florence.

"Why Every Fireman Should Be a Member of the State Firemen's Association," by Ex-chief T. O. S. Dibble of Orangeburg.

"Our Firemen's Association, Its Past Achievements and Its Future Possibility," by Secretary of Newberry Fire Department, I. H. Hunt.

Ohio Amalgamated and Protective Firemen's Association.

The Ohio Firemen's Association, Ohio Firemen's Protective Association and the Lake Erie Volunteer Firemen's Association meeting at Lima, O., June 15 and 16, were merged into one body, known as the Ohio Amalgamated and Protective Firemen's Association.

Officers were elected as follows: President, P. W. Norton, Columbus; first vice-president, Joseph Kirby; Dayton; second vice-president, W. M. Webb, East Liverpool; third vice-president, F. A. Curtis, Lima; fourth vice-president, George Van Tyne, Denison; recording secretary, D. K. Mosier, Warren; secretary-treasurer, W. W. McFadden, Dayton.

The board of trustees elected consists of Capt. Jack Conway, Cincinnati, chairman; Joseph James, Youngstown; Jack Welch, Columbus; John Lewis, Chillicothe; Joe Fitton, Bellaire; S. E. Herrick, Springfield; George Hines, Sidney, and Harry Taffinger, Lima.

New York State Association of County Highway Superintendents.

The annual convention of this association is being held at Glens Falls, N. Y., June 28, 29 and 30. The program arranged for is as follows:

Wednesday, June 28.—Registering delegates at headquarters, Rockwell House; evening, band concert, Rockwell House.

Thursday, June 29, 9 A. M.—Mayor Reed extends welcome and freedom of the city to delegates and visitors in city hall auditorium; 9.30 A. M., leave in Hudson Valley cars for Lake George. Visit Fort George ruins and other points of historic interest; 11.30 A. M., steamer Sagamore leaves Fort William Henry Landing, Lake George, for trip through the lake, and return. Fish dinner served on boat. Returning to Glens Falls via Hudson Valley cars at 5 P. M.

Friday, June 30, 9.30 A. M.—Automobiles leave city hall for the following trips: (1) Glens Falls to Luzerne, to Corinth, to Saratoga, to Glens Falls. Mountain scenery. (2) Glens Falls to Lake George, to Bolton Landing. (3) Glens Falls to Lake George, to Warrensburg, to Chestertown, to Brant Lake. Picturesque trip through the Adirondacks.

ADVANCE CONTRACT NEWS

ADVANCE INFORMATION BIDS ASKED FOR

CONTRACTS AWARDED ITEMIZED PRICES

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS.				
N. J.	Trenton.....	2.30 p.m., July	1..Repairing and reconstructing several roads.....	T. Tobish, Co. Engr.
N. J.	Montclair.....	Noon, July	1..Grading and constructing brick and macadam walks, drive and steps	State Board of Education, Trenton N. J.
W. Va.	Elkins	1 p.m., July	1..Constructing 19 miles of roads and streets.....	Chaney & Armstrong, Engrs., Fairmont W. Va.
O.	Celina	July	1..Improving roads; cost, \$10,000.....	N. O. Hinton, Engineer.
O.	Deshler	July	1..Curbing and paving with brick	City Clerk.
Ind.	Vincennes	July	1..Paving with asphalt, cost \$20,000	H. T. Watts, City Engineer.
O.	Hillsboro	July	1..3 3-4 miles macadam paving, cost \$30,000.....	C. F. Clarke, Co. Engineer.
O.	Ironton	July	1..3 miles water bound macadam.....	W. H. Crawford, Co. Auditor.
Ind.	Muncie	10 a.m., July	1..Constructing gravel and macadam roads.....	F. M. Williams, Co. Aud.
O.	Newark	July	1..Grading and paving several streets.....	C. H. Wells, City Engr.
Ala.	Bay Minette	July	1..Constructing county highways	J. M. Garrett, Co. Engr.
Ala.	Mobile	July	1..Constructing Delta highway.....	County Rd. Comrs.
O.	Maumee	July	1..20,000 sq. yds. of paving	T. N. Dowling, City Clerk
O.	Painesville.....	July	1..Grading and paving 2½ miles with brick; cost, \$15,000.....	C. N. Cummings, Co. Engineer.
Tex.	Athens	July	2..Road construction; \$50,000 available.....	A. E. Axtell, Engineer.
Ind.	Lawrenceburg.....	noon, July	3..Grading, draining and macadamizing road.....	H. E. Lutherbeck, Co. Aud.
Ind.	Jasper	2 p.m., July	3..Grading, draining and paving three roads.....	Jacob H. Seng, Co. Aud.
Ind.	Hartford City.....	2 p.m., July	3..Furnishing ¾-in. stone for road repairs.....	J. L. McGeath, Co. Aud.
Ind.	Bloomington.....	July	3..Paving streets	G. E. Danner, Engineer.
Miss.	Greenwood.....	noon, July	3..Surfacing 100 to 140 miles of roads.....	A. R. Bew, Clerk, Co. Supvrs.
Ind.	Franklin.....	2 p.m., July	3..Three miles of gravel road.....	J. C. Gregg, Co. Aud.
Ind.	Connersville.....	1 p.m., July	3..Grading, draining and paving road.....	Glen Zell, Co. Aud.
Ind.	Hartford City.....	July	3..5,700 ft. of road; cost, \$20,700.....	County Auditor.
Ind.	Jeffersonville.....	10 a.m., July	3..Grading, draining and paving road.....	G. W. Stoner, Co. Aud.
Ind.	Fowler	1 p.m., July	3..Constructing township road	Warren Mankey, Co. Aud.
Ind.	Brownstown.....	2 p.m., July	3..Constr. two mac, three coner. and one gravel road.....	Albert Leudtke, Co. Aud.
Ind.	Versailles.....	1 p.m., July	3..Constructing macadam roads.....	J. F. Lochard, Co. Aud.
Ind.	Portland.....	2 p.m., July	3..Three brick, two gravel and five stone roads.....	John Bonifas, Co. Aud.
Ind.	Kentland.....	1 p.m., July	3..Constructing four macadam roads.....	S. R. Sizelove, Co. Aud.
Ind.	Greencastle.....	2 p.m., July	3..Constructing township road.....	J. M. Allen, Co. Aud.
Miss.	Macon.....	2 p.m., July	3..Three road graders, spreader, heater and road sweeper; asphaltum or Tarvia.....	J. A. Tyson, Chancery Clerk.
Miss.	Louisville.....	July	3..Constructing 54 miles sand-clay road.....	G. E. Hauser, Jr., Engineer, Columbus, Miss.
Ky.	Frankfort.....	July	3..2½ mles macadam road.....	S. B. Smith, Road Engineer.
Minn.	St. Paul.....	10 a.m., July	3..Grading, gravelling and improving roads.....	G. J. Ries, Co. Aud.
Ind.	Greensburg.....	1 p.m., July	3..Constructing township roads.....	J. C. Barbe, Co. Aud.
Ind.	Paoli.....	2 p.m., July	3..Constructing gravel or macadam roads.....	E. A. Palmer, Co. Aud.
Ind.	Kokomo.....	10 a.m., July	3..Surfacing streets with first-class pavement.....	Board of Public Works.
Fla.	Arcadia	July	3..561,749 sq. yds. pavement.....	Phil Lacey, Engr., Zolfo, Fla.
Miss.	Lexington	July	3..27 miles macadam road	Snowden & Hauser, Engrs., Columbus, Miss.
N. C.	Tarboro	July	3..10 miles sand-clay road	H. S. Bunn, Clerk, Co. Comrs.
N. C.	New Bern.....	July	3..Constructing cement gravel roads	H. M. Gorges, Co. Aud.
Ind.	Rensselaer	2 p.m., July	3..Constructing stone road.....	J. P. Hammond, Co. Aud.
Ind.	Greenfield.....	10 a.m., July	3..Constructing gravel road.....	H. J. Rhue, Co. Aud.
O.	Mansfield	July	3..Grading and paving on roads.....	E. A. Merkel, Co. Engr.
Ky.	Seymour	July	3..12 miles concrete, macadam and gravel road.....	County Commissioners.
O.	Dunkirk	July	3..1½ mle macadam pavement.....	R. R. McElroy, Village Clerk.
Cal.	Los Angeles.....	July	3..60,000 yds. concrete pavement; cost, \$91,000.....	A. M. McPherson, Clerk, Bd. Supervisors.
Ind.	Decatur.....	10 a.m., July	3..Constructing macadam roads.....	T. H. Baltzell, Co. Aud.
Ind.	New Castle.....	10 a.m., July	3..Constructing two roads.....	H. C. Elliott, Co. Aud.
Ind.	English	2 p.m., July	3..Constructing township road.....	J. B. Enlow, Co. Auditor.
Ind.	Brookville	1 p.m., July	3..Constructing macadam road.....	C. G. Relfel, Co. Auditor.
Ind.	Danville	10.30 a.m., July	3..Constructing road	C. M. Havens, Co. Aud.
Ind.	Tipton	10 a.m., July	3..Constructing gravel roads in two townships.....	Oscar Vanness, Co. Auditor.
Minn.	St. Paul.....	10.30 a.m., July	3..Grading and curbing several streets.....	H. W. Austin, Pur. Agent.
Pa.	Bradford	July	3..Laying 8,000 sq. yds. brick pavement and 7,000 ft. of curb.....	E. C. Charlton, City Clerk.
N. J.	Bloomfield.....	8 p.m., July	3..5,000 sq. yds. of bitulithic, 3,000 ft. bluestone curb, etc.....	E. F. Baechlin, Town Engr.
Pa.	Greensburg	8 p.m., July	3..Paving and improving several streets.....	J. Neal, City Engineer.
Cal.	San Rafael	8.30 p.m., July	3..Paving with macadam	E. W. Smith, City Clerk.
Cal.	San Jose	11 a.m., July	3..40,000 sq. yds. concrete pavement with 1½ in. asphalt top	County Clerk.
Cal.	Los Angeles	2 p.m., July	3..Constructing oiled macadam pavement	H. J. Lelande, County Clerk.
Ky.	Paducah	July	3..Constructing 36 miles of road.....	Ballard Fiscal Court.
Ind.	Scottsburg.....	1 p.m., July	3..2.6 miles gravel roads; cost, \$17,550.....	Robert Blunt, Co. Aud.
Ind.	Huntington.....	7.30 p.m., July	3..Constructing cement sidewalks.....	H. I. Young, City Clerk.
Mich.	Dayton	9 a.m., July	3..Constructing 5½ miles gravel roads.....	J. M. Rottier, Clerk, R. F. D. No. 2, Fremont, Mich.
Ky.	Maysville	8 p.m., July	3..Paving with vitrified brick.....	J. W. Lee, Mayor.
Ky.	Wickliffe	July	3..Constructing 38 miles of gravel roads.....	G. O. Johnson, Co. Clerk.
Wash.	Everett	1 p.m., July	3..Grading and surfacing roads, 4 contracts.....	Mae Weatherbee, Co. Aud.
O.	Madiera	Noon, July	3..Constructing cement sidewalks.....	F. L. Rey, Village Clerk.
N. C.	Washington	Noon, July	3..Constructing 1½ miles concrete road.....	W. E. Swindell, Chmn. Co. Comrs.
Pa.	Harrisburg	Noon, July	3..10,150 sq. yds. sheet asphalt and 7,000 ft. curbing.....	W. H. Lynch, Supt. of Streets.
Mont.	Fairview	8 p.m., July	3..Constructing 7,800 sq. ft. cement walk.....	John Bird, Town Clerk.
Pa.	Woodlawn	10 a.m., July	3..1,165 ft. concrete curb and gutter and 520 sq. yds. concrete sidewalk	W. M. Anderson, Asst. Boro. Engr.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Pa.	Edwardsville	4 p.m., July	3..Paving with brick.....	City Clerk.
Ill.	DeKalb	10 a.m., July	3..3,000 yds. concrete and 14,000 yds. brick pavement, concrete curb and gutter.....	A. R. Russell, City Engineer.
Ind.	North Vernon	7.30 p.m., July	3..Paving 16,300 yds. with brick.....	C. W. Miles, City Engineer.
Man.	Winnipeg	10 a.m., July	4..Furnishing 250 tons refined asphalt.....	M. Peterson, Secy. Bd. of Control.
Ind.	Brazil	7.30 p.m., July	4..Constructing concrete sidewalks.....	City Engineer.
Ky.	Danville	7.30 p.m., July	4..7,000 sq. yds. asphalt pavement.....	S. F. Crecelius, Engr.
O.	Columbus	noon, July	5..Curbing and paving with asphalt, brick, etc.....	G. A. Borden, Dir. Pub. Serv.
O.	Cincinnati	July	3..Paving with brick and bit. macadam, cost \$30,000.....	F. S. Krug, City Engr.
O.	Cleveland	July	5..Paving Bulkley Boulevard.....	Commissioner of Pur. & Sup.
Conn.	Wallingford	July	5..Paving 4,000 yds. with Hassam or concrete.....	W. A. McKenzie, City Engr.
Ill.	Paris	July	5..Laying 7,150 sq. yds. concrete pavement.....	O. F. Wold, City Engr.
Conn.	Bristol	July	5..Paving with granite block.....	C. W. Buell, City Engr.
Cal.	Salinas	July	5..Constructing highway.....	Board of County Suprvs.
N. Y.	Brooklyn	11 a.m., July	5..Laying sidewalks and paving with asphalt and granite; furnishing 120,000 gallons refined asphalt and 200 tons asphalt.....	Bur. of Highways, 50 Court St.
Ind.	Vincennes	2 p.m., July	5..Constructing one mile of gravel road.....	J. Muentzer, County Auditor.
Ind.	Delphi	noon, July	5..Constructing gravel or macadam roads.....	H. D. Good, Co. Aud.
O.	Hamilton	noon, July	5..Constructing 1,000 yds. stone road; cost, \$2,700.....	Fred Hammerle, Engineer.
Ky.	Mt. Sterling	July	5..8,600 yds. asphalt, brick, tarvia or bitulithic.....	C. K. Oldham, Mayor.
Ind.	Indianapolis	10 a.m., July	5..Paving streets and alleys.....	Board of Public Works.
N. J.	Oaklyn	8 p.m., July	5..Constructing asphalt macadam with concrete gutters.....	J. C. Remington, Engineer, Camden, N. J.
Mich.	Spring Lake	5.30 p.m., July	5..Paving State street.....	W. D. Spencer, Village Clk.
W. Va.	Wheeling	10 a.m., July	5..Surfacing, paving with brick, concrete and bituminous macadam and furnishing ready to crush 7,500 cu. yds. of stone.....	G. W. Steenrod, Co. Rd. Engr.
Ill.	Park Ridge	July	5..Laying 9,000 sq. yds. asphaltic concrete.....	Board of Local Improvements 400 Pullman Bldg., Chicago.
N. J.	Paterson	2 p.m., July	5..Paving 4 roads with bituminous concrete.....	County Engineer.
Miss.	Winona	July	5..13 miles macadam or gravel road.....	Snowden & Hauser, Engrs., Columbus, Miss.
Miss.	Macon	2 p.m., July	5..Dragging road in county.....	J. A. Tyson, Chancery Clerk.
Ind.	Columbus	10 a.m., July	5..Constructing concrete road.....	W. H. Scott, Co. Aud.
O.	Cleveland	noon, July	5..Paving 17 blocks.....	Park Engineer, City Hall.
Ind.	Crawfordsville	10 a.m., July	5..Constructing gravel roads.....	Dr. W. F. Batman, Co. Aud.
Ind.	Lebanon	10 a.m., July	5..Constructing roads in three townships.....	Cleve Goodwin, Co. Aud.
Ind.	Shelbyville	10 a.m., July	5..3 gravel roads, total length 46,325 ft.....	F. W. Fagel, Co. Auditor.
Ind.	Logansport	10 a.m., July	5..Constructing township road.....	A. P. Flynn, Co. Auditor.
Md.	Baltimore	July	5..25 miles state highway.....	State Roads Commission.
N. J.	Princeton	July	5..20,000 sq. yds. asphalt block pavement.....	G. M. Brown, Engineer.
Ind.	Rockville	11 a.m., July	5..Grading and graveling roads.....	Charles Davis, Co. Aud.
Utah	Salt Lake City	July	5..21,000 sq. yds. brick pavement, 12,000 yds. asphalt resurfacing and 10,000 ft. curb.....	Board of Public Works.
Wis.	Portage	2 p.m., July	5..Constructing combined curb and gutter.....	Fred Goss, City Clerk.
Ind.	Goshen	1.30 p.m., July	5..Constructing brick or other road.....	A. R. Bemenderfer, Co. Aud.
Ind.	Noblesville	10 a.m., July	5..Constructing 4 roads.....	W. O. Horton, Co. Aud.
Ind.	Lafayette	10 a.m., July	5..2.56 miles gravel road.....	Geo. W. Baxter, Co. Aud.
Ind.	Covington	2 p.m., July	5..Constructing gravel road.....	H. W. Jewlin, Co. Aud.
O.	Hamilton	10 a.m., July	5..Furnishing and placing crushed stone.....	W. W. Crawford, Clerk, Co. Commissioners.
Ind.	Kokomo	10 a.m., July	5..20,205 ft. gravel road (two jobs).....	W. L. Benson, Co. Aud.
Ind.	Corydon	2 p.m., July	5..Constructing gravel road.....	J. L. O'Bannon, Co. Aud.
Ind.	Valparaiso	2 p.m., July	5..Two gravel roads; total length 1.9 mile.....	C. A. Blachly, Co. Aud.
Ind.	Rochester	2 p.m., July	5..Constructing seven gravel roads.....	E. A. Smith, Co. Aud.
Ind.	Plymouth	2 p.m., July	5..Constructing two roads.....	O. H. Weber, Co. Aud.
La.	Terrebonne	noon, July	5..Constructing 11.7 miles sand-clay-gravel roads.....	T. B. Smith, Eng., Houma, La.
Ind.	Mt. Vernon	2 p.m., July	5..1,800 ft. stone road.....	J. R. Haines, Co. Auditor.
Ind.	Monticello	10 a.m., July	5..Grading, draining and paving road.....	A. G. Fisher, Co. Aud.
Ind.	Columbia City	noon, July	5..Grading, drain. and pav. with gravel, brick and coner.....	T. A. McLaughlin, Co. Aud.
Fla.	Lake City	July	5..21,000 yds. brick or asphalt, 12,000 yds. asphalt resurfacing on macadam; 10,000 ft. of concrete curb.....	C. R. Horne, Engineer.
Va.	Harrisonburg	noon, July	5..Laying about 18,000 yds. brick and asph. block pav't.....	City Clerk.
N. J.	South Orange	7.30 p.m., July	5..5,600 sq. ft. cement sidewalk.....	I. T. Redfern, Village Engr.
Md.	Cumberland	10 a.m., July	5..Constructing 3.33 miles state aid road.....	County Road Directors.
N. D.	Fargo	3 p.m., July	5..First-class pavement on several streets.....	A. R. Watkins, Co. Auditor.
N. D.	Langdon	2 p.m., July	5..12-ft. blade grader and five road drags.....	O. J. Eide, Co. Auditor.
Minn.	Marble	8 p.m., July	6..Constructing six miles judicial road.....	T. C. Applegate Twp. Clerk.
Conn.	Hartford	2 p.m., July	6..Constructing 6,800 ft. 6-inch stone road.....	C. J. Bennett, State Hwy. Com.
Ind.	Indianapolis	2 p.m., July	6..Improving and paving streets and laying sidewalk.....	Board of Park Commissioners.
Minn.	Northfield	9 a.m., July	6..13,000 sq. yds. wood, concrete or bitulithic pavement and concrete retaining wall 165 ft. long.....	C. E. Hoppin, Recorder.
O.	Wauseon	July	6..Grading and macadamizing road.....	C. O. Castle, Engr., Court Hse.
Pa.	Wilkes-Barre	8 p.m., July	6..Paving with brick and belgian block in Plains township.....	Parson & Morgan, Twp. Engineers, 2d Nat. Bank Bldg.
Mo.	Fulton	8 p.m., July	6..2,000 yds. bit. mac. and 1,400 ft. concrete curb.....	S. E. Baker, City Engineer.
Ind.	Warsaw	10 a.m., July	6..Constructing gravel roads.....	V. D. Mock, Co. Aud.
Tenn.	Rogersville	July	6..90 miles road construction, requiring 500 culverts, 500,000 cu. yds. excavation, etc.; cost, \$450,000.....	S. C. Cornell, Chief Engineer, County Road Commission.
N. C.	Greenville	3 p.m., July	6..30,000 yds. first-class pavement, 25,000 ft. granite curb, 20,000 ft. concrete gutters and 1,000 sq. yds. sidewalk.....	G. C. White, Engr., Durham.
Ind.	Indianapolis	10 a.m., July	6..Constructing four roads.....	L. K. Fesler, Co. Aud.
Ind.	La Porte	10 a.m., July	6..Constructing two roads.....	F. A. Hausheer, Co. Auditor.
Conn.	Hartford	July	6..27,000 ft. macadam and bit. mac. highway.....	State H'way Comrs.
Wash.	Ephrata	July	6..Surfacing 6 1/2 miles of road.....	E. H. Stradling, Co. Engr.
O.	Troy	July	6..1,400 sq. yds. concrete pavement.....	L. P. Knoop, County Engineer.
N. J.	Lakewood	1 p.m., July	6..Paving 15,500 yds. (one of three pavements).....	G. H. Hurlburt, Twp. Clerk.
O.	Springfield	noon, July	6..Paving and improving several streets.....	C. E. Ashburner, City Man'g'r.
Ind.	Crown Point	1 p.m., July	6..Constructing gravel road.....	Edward Simon, Co. Auditor.
O.	Cleveland	noon, July	6..Furnishing crushed stone for reservoir.....	Deputy Com'r of Water.
Mich.	Lapeer	July	6..Road construction; cost, \$50,000.....	H. W. Davis, Co. Rd. Com'r.
O.	Delaware	Noon, July	6..Paving with brick or concrete.....	Rena Swickelmer, Clk., Pub. Service.
N. J.	Elizabeth	2.30 p.m., July	6..Paving with old and new granite block 45,000 sq. yds. and laying 36,000 sq. yds. asphaltic concrete; blue-stone curb, etc.....	W. P. Neafsey, Street Comr.
Miss.	Corinth	2 p.m., July	6..Constructing 15 miles gravel road.....	W. C. Sweat, Attorney.
Ia.	Spencer	1.30 p.m., July	7..20 miles road grading requiring 70,000 cu. yds. excavation.....	Walter Barber, Co. Engr.
Mo.	St. Louis	Noon, July	7..Paving with brick 9 contracts.....	W. T. Findly, Secy. B. P. W.
Ind.	Mt. Vernon	2 p.m., July	7..14,000 ft. gravel road.....	J. R. Haines, Co. Aud.
N. J.	Roselle Park	8.30 p.m., July	7..Constructing sidewalks and curbs.....	W. H. Luster, Boro Engineer, Elizabeth, N. J.
Ia.	Spencer	July	7..Grading 20 miles of road, 70,000 cu. yds.....	Walter Barber, Co. Engr.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES
O., Cincinnati	July	7..	Pav. with concr., asph. concr. or Warrenite; cost, \$80,000.	Albert Reinhardt, Clerk, Co. Comrs.
New York, Brookhaven	July	8..	Constructing concrete pavement.	E. A. May, Engr., Patchogue.
Md., Frederick	Noon, July	8..	2.56 miles state aid highway.	H. L. Gavet, Clerk Co. Comrs.
Ind., Terre Haute	11 a.m., July	8..	Grading, draining and paving gravel road.	Thos. Ferguson, Co. Aud.
Neb., Lincoln	July	9..	Paving with brick	County Clerk.
O., Jefferson	noon, July	10..	Laying first class pavement on several streets.	F. G. Brown, Clerk
Minn., Rush City	1 p.m., July	10..	Grading and turnpiking 1 1/4 miles.	A. F. L. Stromgren, Co. Aud.
Ariz., Phoenix	July	10..	12,200 yds. paving and 5,700 ft. curbing.	R. A. Craig, City Manager
Mich., Grand Rapids	July	10..	Constructing county roads.	Frank Sherman, Co. Aud.
O., Defiance	July	10..	Grading, curbing and paving, cost \$60,000.	D. S. Meier, Dir. Pub. Service.
O., Columbus	noon, July	10..	500 tons pav. pitch filler and 1,100 bbls. Portland c'm't.	Henry Maetzel, City Engr.
O., West Jefferson	noon, July	10..	Constructing 37,000 sq. yds. pavement.	F. G. Brown, Village Clerk.
Fla., Miami	July	10..	54,000 sq. yds. asphaltic pavement.	W. B. Moore, City Clerk.
O., Martins Ferry	July	10..	Paving 3,500 sq. yds., grading and curbing.	Carl Lash, Engineer.
Ind., Kokomo	July	10..	Oiling several streets	Ben Havens, City Clerk.
Ala., Dothan	July	10..	Constructing 20 miles of road.	W. R. Koonce, Co. Engr.
Wash., Seattle	11 a.m., July	10..	Constructing county road	Byron Phelps, Clk. Co. Comrs.
Cal., Sacramento	July	10..	Paving 7 miles of highway.	State Highway Commission.
O., Alger	July	10..	Grading and paving Main street.	W. E. Meyers, Engr., Kenton, O.
Pa., Beaver Falls	July	10..	Street paving; cost, \$25,000.	Boro Clerk.
N. Y., Albany	1 p.m., July	10..	Constructing State highways.	Edwin Duffey, St. Hwy. Comr.
Ind., Peru	Noon, July	10..	Paving with gravel and concrete.	F. K. McElheny, Co. Aud.
Ala., Dadeville	noon, July	10..	Constructing 107 miles of road (two jobs).	County Commissioners.
Miss., Greenwood	July	10..	100 to 140 miles hard surface road; \$600,000 available.	County Supervisors.
Tex., Caldwell	July	10..	Sand clay roads; \$20,000 available.	C. H. Maljowsky, Engineer.
Minn., Pipestone	8 p.m., July	10..	Curbing and paving with concrete 33 blocks.	L. P. Wolff, Engr., Germania Life Bldg., St. Paul, Minn.
Ia., Muscatine	2 p.m., July	10..	Grading and surfacing with sand clay, 14,000 sq. yds.	F. P. G. Halbfass, Co. Aud.
Minn., Grand Rapids	10 a.m., July	10..	Constructing several miles of county road.	Frank Sherman, Co. Auditor
Minn., Elks River	2 p.m., July	10..	Constructing state road No. 3.	F. W. Nickerson, Co. Engr.
Minn., Center City	July	10..	Constructing gravel road requiring 930 cu. yds. of gravel.	A. F. L. Stromgren, Co. Aud.
Ia., Clinton	July	11..	Constructing macadam road, cost \$2,300.	City Clerk.
Ind., Indianapolis	10 a.m., July	11..	Constructing two gravel roads.	L. K. Fesler, Co. Aud.
Ind., Frankfort	2 p.m., July	11..	Constructing 2 1/2 miles gravel road.	Edward Spray, Co. Aud.
Minn., Buffalo	2 p.m., July	11..	Grading two state roads	J. A. Berg, County Aud.
Wash., Concrete	July	11..	Laying concrete pavement on three streets.	G. L. Leonard, City Clerk
N. J., Bayonne	July	11..	Paving with granite block and asphalt and bituminous macadam, 25,000 yds.	City Engr.
Ind., South Bend	10 a.m., July	11..	Gravel pavement, grading, curbs and walks.	Veronica Sweeney, Clerk, Bd. P. W.
N. Y., Oneida	July	11..	Paving with brick or bitulithic, cost \$20,000	J. M. Hutton, City Engineer
O., Columbus	noon, July	11..	Grading, curbing, and pav. with asph. or brick.	J. A. Borden, Dir. Pub. Serv.
Md., Rockville	2 p.m., July	11..	5 miles of paving.	County Commissioners.
Ill., Berwyn	8 p.m., July	11..	Pav. and constr. concr. curb and gutter.	Board of Local Improvements.
Ind., Plainfield	2 p.m., July	11..	4,800 ft. asphalt, brick, concrete or bit. con.	C. A. Heringlake, Town Clerk.
Wash., Seattle	11 a.m., July	11..	Constructing permanent highway No. 2.	Byron Phelps, Clk. Co. Comrs.
Ky., Hazard	July	12..	20,791 sq. yds. 2-course reinforced concrete pavement, cost \$50,785	D. E. Harris, City Engr.
N. Y., Albany	1 p.m., July	12..	Constructing State highways.	Edwin Duffey, St. Hwy. Comr.
Ala., Tuscumbia	July	12..	Graveling and grading 8 miles of road.	W. S. Keller, State Hwy. Comr., Montgomery.
Cal., Anaheim	July	13..	42,000 sq. yds. sheet asphalt on concrete.	E. O. Stewart, City Clerk
N. J., Jersey City	July	13..	Improving Paterson road	T. J. Wasser, County Engr.
O., Waynesfield	noon, July	13..	Paving and improving streets	A. F. Basil, Village Clerk.
Ind., New Albany	10 a.m., July	14..	Constructing 7,416 ft. road.	Emile Dupaquier, Co. Aud.
N. Y., Albany	1 p.m., July	14..	Constructing state highways.	Edwin Duffey, St. Hwy. Comr.
Minn., Aitkin	9 a.m., July	14..	Constructing and improving state road.	H. C. Beecher, Co. Auditor.
N. D., Beach	10 a.m., July	15..	Grading roads	M. C. McCarthy, Co. Auditor.
Ia., Dubuque	8 p.m., July	15..	3,400 yds. of macadam, 5,400 yds. of excavation and 1,700 ft. concrete curb.	J. J. Shea, City Recorder.
O., Smithville	July	15..	Paving with bituminous macadam, cost \$10,000.	D. D. Hartzler, City Clerk
Wis., West Allis	July	15..	6,750 sq. yds. concr. pav't and 1,340 cu. yds. excavation.	E. G. Orbert, City Engineer.
O., Waynesville	July	15..	Grading and paving; cost, \$24,000.	A. F. Basil, Village Clerk.
O., Norwood	July	15..	Paving with brick or macadam.	J. G. Schmidt, Engineer.
N. Y., Albany	1 p.m., July	16..	8.13 miles state road in Otsego county.	Edwin Duffey, St. Hwy. Com.
O., Cleveland	July	17..	Grading and constructing cement walks at schools.	F. G. Hogen, Dir. of Schools.
O., Cleveland Heights	noon, July	17..	Paving, curbing and grading.	F. A. Pease Engineering Co., Marshall Bldg., Cleveland, O.
Ind., South Bend	11 a.m., July	17..	Constructing road	A. F. Wolf, County Auditor.
Ind., Evansville	10 a.m., July	17..	Constructing and improving highways.	C. P. Beard, Co. Aud.
Ind., Bloomington	2 p.m., July	20..	Constructing gravel road, four jobs.	W. F. Kinser, Co. Aud.
La., Amite	10 a.m., July	25..	Constructing 20 miles of road.	J. E. Kerrigan, Hammond, La.
N. J., Morristown	July	26..	Constructing section of road.	Ed of County Freeholders.
Ind., Evansville	10 a.m., July	27..	Constructing and improving roads.	C. P. Beard, Co. Aud.
Ind., Peru	10 a.m., July	29..	Constructing gravel and concrete roads.	F. K. McElheny, Co. Aud.
Ill., Springfield	Aug.	11..	Curbing and paving with brick; cost, \$75,000.	W. D. Seeley, City Engineer.

SEWERAGE.

N. Y., Collingswood	June	1..	Constructing storm sewers	Remington & Vosbury, Engineers, Camden, N. J.
O., Portsmouth	July	1..	Sanitary sewer system; cost, \$41,476.	Ralph Calvert, Dir. Public Service.
Minn., Benson	July	1..	48 miles drainage ditch; 250 miles 6 to 30-in. tile.	F. B. Gardner, Engineer.
Mich., Ann Arbor	July	1..	Constructing storm sewers.	Manly Osgood, City Engineer.
O., Hamilton	July	1..	Sewer, req'g 45,000 ft. 5 to 18-in. tile; est. cost, \$52,000.	H. C. Garver, Dir. Pub. Serv.
O., Hamilton	July	1..	Ditch constr., requiring 8,000 ft. of tile.	Fred Hammerle, Engineer.
Wis., Wauwatosa	July	1..	2,300 ft. of 12-in. sewer.	F. A. Torkelson, Engineer.
Mass., Agawam	10 a.m., July	1..	Furnishing 14,000 ft. 6 to 20-in. sewer pipe and constructing sewers	White and Towne, Hampden St., Springfield, Mass.
Texas, Houston	10 a.m., July	3..	Constructing 1,600 ft. 36-in. sewer.	H. L. Washburn, Co. Aud.
La., Shreveport	July	3..	Constructing sanitary sewers	J. D. Hawley, Engr.
Mont., Kalispell	July	3..	Constructing sanitary sewers	R. E. Rollins, City Clerk
Mont., Whitefish	July	3..	Constructing sewers	R. H. Wiedman, City Clerk
Minn., Tracy	8 p.m., July	3..	850 ft. 8 and 12-in. vitrified sewers.	L. J. Fitch, City Recorder
N. J., Plainfield	July	3..	44,077 ft. 8 to 24-in. vitrified sewer, 4,944 ft. 8 to 18-in. c. i. sewer, 112 manholes, 44 flush tanks and sewage pumping station	J. T. MacMurray, City Clerk.
Fla., Gainesville	July	3..	2 1/2 miles 8 to 12-in. sanitary sewers.	G. H. Cairns, Engineer.
Minn., St. Paul	10:30 a.m., July	3..	Constructing sewers in several streets.	H. W. Austin, Pur. Agent.
Pa., Woodlawn	10 a.m., July	3..	1,600 ft. 6 to 24-inch storm sewer.	W. M. Anderson, Asst. B. Engr.
Mich., Bay City	9 a.m., July	3..	Constructing 10-inch tile sewers.	F. P. S. Kelton, Chmn. D. P. W.
Pa., Edwarsville	4 p.m., July	3..	Constructing 12-inch storm sewer.	F. Butts, Boro. Engr., Miners Bank Bldg., Wilkes-Barre.
Neb., Hartington	8 p.m., July	3..	Constructing sanitary sewer.	W. H. Pohle, City Clerk.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Ind., Brazil	7:30 p.m., July	4..	Constructing sanitary sewer system.....	City Engineer.
Pa., Johnsonburg	July	5..	Constructing disposal plant and laying trunk sewers.....	E. M. Wallis, Boro Secy.
O., Columbus	noon, July	5..	Constructing sewers in several streets.....	G. A. Borden, Dir. Pub. Serv.
N. Y., Brooklyn	11 a.m., July	5..	Constructing sewers, 12 to 15-in. pipe and 30 to 78-in. brick.....	L. H. Pounds, Boro. Pres.
O., Tiffin	noon, July	5..	Constructing 500 ft. of sewer.....	William Heller, Dir. Pub. Ser.
N. J., Oaklyn	8 p.m., July	5..	Constructing lateral sewer.....	J. C. Remington, Engineer, Market St., Camden, N. J.
Wis., Portage	2 p.m., July	5..	Constructing 2,600 ft. vit. storm sewer.....	H. B. Tennant, Engr.
Ind., Indianapolis	10 a.m., July	5..	Constructing local sewer.....	Board of Public Works.
Minn., Litchfield	8 p.m., July	6..	Constructing 1,120 ft. of sewer.....	F. O. Holm, Village Recorder.
Wis., West Bend	7:30 p.m., July	6..	Constructing storm sewer.....	Aug. Bastian, Chmn. B. P. W.
O., Springfield	noon, July	6..	Constructing two combined sewers.....	C. E. Ashburner, City Mgr.
Conn., Windsor	8 p.m., July	6..	1,110 ft. 8-in. tile sewers.....	Board of Commissioners.
Pa., Wilkes-Barre	8 p.m., July	6..	Constructing storm sewer in Plains township.....	Parson & Morgan, Twp. Engineers, 2d Nat. Bank Bldg.
Ind., Poland	noon, July	7..	Septic tank and water system at school building.....	A. F. Kattman, Trustee.
Ind., Spencer	July	7..	Constructing sewers in several streets.....	E. O'Keefe, City Clerk.
N. Y., Oswego	2 p.m., July	7..	5,500 ft. 8 and 10-in. vit. sewers.....	City Engineer.
Ind., New Hampton	7:30 p.m., July	7..	Imhoff type disposal plant and 4,000 ft. 8 to 15-in. sewers.....	F. P. Strike, City Clerk.
Minn., Pipestone	8 p.m., July	10..	Constructing storm water sewers.....	L. P. Wolff, Engr., Germania Life Bldg., St. Paul.
O., Columbus	noon, July	10..	Furnishing 6,500 ft. 4 to 24-in. sewer pipe.....	Henry Maetzel, City Engr.
Minn., Wadena	8 p.m., July	10..	33,300 ft. 6 to 12-in. sewer, 105 manholes disposal plant, pump and chemical equipment.....	A. C. Murray, Village Rec'd'r.
Ill., Berwyn	8 p.m., July	11..	Constructing tile house drain.....	Board of Local Improvements.
Minn., Thief River Falls	8 p.m., "	11..	Constructing 1,425 ft. 8 and 10-in. sewer.....	A. H. Fasel, City Clerk.
Ill., Salem	July	13..	Sewer system and disposal plant, cost \$50,000.....	City Clerk.
Ind., Mapleton	July	15..	Constructing sewer system; cost, \$30,000.....	City Clerk.
Minn., Benson	10 a.m., July	15..	Drainage ditch, requiring 47,000 ft. 4 to 36-in. tile.....	D. P. Carney, Co. Aud.
Ind., Bloomfield	10 a.m., July	15..	Constructing tile drain.....	E. O. Jackson, Comr. of Const.
Ind., Charter Oak	July	16..	Sewer construction, cost \$25,000.....	City Clerk.
Mo., Stanberry	July	17..	Constructing sewer system, cost \$25,000.....	Black & Veatch, Engineers, Interstate Bldg., Kansas City, Mo.
O., Cleveland Heights	noon, July	17..	Constructing sanitary sewers.....	F. A. Pease Engineering Co., Marshall Bldg., Cleveland, O.
Minn., Red Lake Falls	8 p.m., July	17..	8,500 ft. 8 to 20-in. vitrified sewers.....	J. A. Wallace, Engr., Crookston.
Minn., Morris	10 a.m., July	25..	Drainage ditch, requiring 8 to 24-in. tile.....	C. R. Wollthan, Co. Auditor.
Ind., Lafayette	July	26..	Constructing three sewers.....	H. B. Overesch, Engineer.
Fla., Miami	Aug.	3..	8 to 18-in. sewers, \$25,000 available.....	B. H. Klyce, Engr.

WATER SUPPLY.

N. Y., Troy	July	1..	Concrete gate house and 24x16-in. reducer.....	A. E. Roche, City Engineer.
Ill., Rock Island	July	1..	100,000-gal. tank and 125-ft. tower.....	Wallace Treichler, City Engr.
N. D., Harvey	July	3..	Making water connections for one year.....	L. W. Miller, City Aud.
O., Springfield	noon, July	3..	193 tons 6-in. c. i. pipe.....	C. E. Ashburner, City Man'gr.
Miss., Clarksdale	July	3..	22,500-gal. per. min. centrifugal pump, boiler and 400 ft. 36-in. pipe (steel).....	T. H. Allen, Engineer, Memphis, Tenn.
Miss., Macon	July	3..	Remodeling water works at jail.....	J. A. Tyson, Chancery Clerk
Ont., Toronto	noon, July	4..	Furnishing 8-in. water meter.....	Works Department.
Ont., Toronto	noon, July	4..	Furnishing 4-in. stop valves.....	T. L. Church, Chairman Board of Control.
N. J., New Brunswick	10 a.m., July	5..	Designing and installing 6,000,000-gallon Wheeler filter bottom.....	Asher Atkinson, City Engr.
O., Columbus	noon, July	5..	Making water connections.....	G. A. Borden, Dir. Pub. Serv.
O., Middletown	noon, July	5..	Connecting 12 wells, laying 122 ft. 30-in. pipe; constructing pump house and reservoir.....	City Commissioners.
N. Y., Walden	5 p.m., July	6..	Reconstructing 300-ft. dam 10 ft. high.....	Alexander Thomson, Jr., Engineer, Newburgh, N. Y.
Ind., Michigan City	July	6..	Furnishing water pipe and specials.....	Alex. Sychalski, City Clerk
O., Cleveland	noon, July	6..	Furnishing 30 and 36-in. riveted steel pipe.....	Deputy Comr. of Water.
Fla., Jacksonville	8 p.m., July	6..	Furnishing 2,400 ft. 6 and 8-in. c. i. pipe, 5 tons fittings and 500 c. i. meter box frames and covers.....	R. N. Ellis, City Pur. Agt.
Cal., Lindsay	Noon, July	7..	Constructing 37 wells and pumping plants, 9 miles wood stave pipe, 3 1/4 miles 60-in. concrete pipe, 85 miles steel pipe and 12 miles concrete ditch, with pumps, etc.....	S. E. Kieffer, 57 Post St., San Francisco.
O., Columbus	noon, July	7..	25,000,000-gal. steam turbine centrifugal pump.....	G. A. Borden, Pres. Bd. Pur.
Cal., Los Angeles	2 p.m., July	10..	Furnishing water pipe.....	H. J. Lelande, County Clerk.
D. C., Washington	July	10..	Furnishing 353 tons c. i. pipe and specials.....	District Commissioners.
Mont., Great Falls	July	10..	12,000,000-gal. filtration plant.....	Burns and McDonnell, Engineers, Kansas City, Mo.
Neb., Ralston	July	10..	Constructing 8 or 10-inch well complete.....	L. S. Packard, Village Clerk.
O., Columbus	noon, July	11..	Laying water service pipe.....	Chas. Maetzel, City Engineer.
Mass., Lynn	10 a.m., July	11..	Furnishing large water meter.....	Thos. Campbell, 2nd, Comr. of Water.
Ill., Berwyn	8 p.m., July	11..	Laying 12-in. c. i. pipe.....	Bd. of Local Improvements.
Miss., Baldwin	July	12..	Constructing power plant and pumping station.....	X. A. Kramer, Engr., Magnolia, Miss.
N. C., Salisbury	3 p.m., July	12..	Laying 5 1/2 miles 16-in. c. i. pipe, installing pumping plant and constructing reservoir and filtration plant.....	J. W. Neave, Supt.
Neb., Bellwood	noon, July	12..	Constructing waterworks system.....	J. P. Delaney, City Clerk.
Sask., Saskatoon	noon, July	13..	Completing work on force water main.....	C. J. Yorath, City Comr.
Nevada, Lovelock	July	15..	1,000,000-gallon reservoir, 20,000 ft. of 4 to 8-in. c.-i. or steel pipe, hydrants, valves, etc.....	L. H. Taylor, Engr.
Mont., St. Ignatius	July	18..	Constructing and laying 3,570 ft. concrete pipe line, 2,560 sq. yds. pavement and 8,000 yds. excavation.....	U. S. Reclamation Service.
N. C., Wilmington	10 a.m., July	19..	Furn. 500 water meters; painting stand pipe.....	T. D. Meares, City Clerk.
Neb., Wahoo	2 p.m., July	26..	225 h. p. engine and direct-connected generator, 25 h. p. motor and triplex pump.....	H. M. Robertson, Supt. W. & L.
Wis., Shawano	July	27..	Constructing large concrete dam, power house, and two flumes and furnishing 4,000 bbls. cement, 45,000 brick, reinforcing, etc.....	Electric Lt. & Water Comn.

MISCELLANEOUS.

Ind., Sullivan	2 p.m., July	1..	Levee work, including 70,000 sq. yds. concrete facing, 85,000 cu. yds. excavation and 880 cu. yds. concrete footing.....	G. C. Greater, Engineer.
Ind., Kentland	July	1..	23 miles drainage ditch construction.....	Ross Lucas, Com'r, Morocco Ind.
Ariz., Douglas	July	1..	Collecting and disposing of garbage.....	City Clerk.
O., Tiffin	10 a.m., July	1..	Constructing concrete retaining wall.....	J. E. Hershberger, Co. Aud.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Tenn.	Memphis	.....July	3..Furnishing wire, wire cable and rubber hose.....	U. S. Engineer Office.
Tex.	Fort Worth	.....10 a.m., July	3..Repairing and constructing levees and cleaning channels..	District Engineer.
Ind.	Fort Wayne	.....4 p.m., July	3..Constructing comfort stations.....	Board of Park Comrs.
O.	Cleveland	.....Noon, July	5..Constructing concrete swimming pool.....	Park Engineer, City Hall.
Tex.	Beaumont	.....10 a.m., July	5..Freight handling machinery.....	J. G. Sutton, City Secy.
N. J.	Newark	.....8.30 p.m., July	6..One automobile complete.....	A. Archibald, City Clerk.
Pa.	Philadelphia	.....noon, July	6..Installing sterilizer at schoolhouse.....	P. H. Johnson, Architect, Land Title Bldg.
Minn.	Long Prairie	.....1.30 p.m., July	7..Constructing drainage ditch, cost \$20,600.....	E. M. Berg, Co. Auditor.
Neb.	Silver Creek	.....9 a.m., July	10..20-h. p. oil engine.....	F. Buchanan, Village Clerk.
Minn.	Worthington	.....11 a.m., July	26..Constructing drainage ditch, cost \$6,500.....	Gus Swanberg, Co. Auditor.
Siam	Bangkok	.....Aug.	1..Furnishing suction or hydraulic dredge.....	Director General, Royal Irrigation Dept.

STREETS AND ROADS

Fort Smith, Ark.—Towson Ave. is to be improved with concrete pavement and a wide gutter.

Phoenix, Ariz.—A resolution has been adopted directing the advertising of bids for paving North Fourth St.

Auburn, Cal.—The 25,000 bond election for the paving of the intersections and terminals of streets abutting on the main streets leading from Nevada St. station to Railroad St. station, will be held June 27th.

Berkley, Cal.—University Ave. and Carlton St. are to be improved by paving, sidewalk and vitrified iron stone sewer.

Sacramento, Cal.—A report recommending the construction of 15 highways with a total mileage of 124.07 miles at an estimated cost of \$1,750,000, and that a bond election be called to determine whether bonds in that amount shall be issued, has been filed with the Board of Supervisors by the Sacramento County Highway Commission.

Bridgeport, Conn.—Council has authorized the widening of Water St. and Housatonic Ave.

Stockton, Cal.—Appropriations have been made for the paving and grading of Miner Ave. on the sides from Hunter St. to Pilgrim St.

Gainesville, Fla.—The extending of city limits to Newnan's lake and constructing a hard surface road to the lake is under consideration.

Miami, Fla.—All bids on asphalt pavement have been rejected and will be readvertised.

Sebring, Fla.—Bonds amounting to \$50,000 have been issued for the purpose of street paving. The city officials have advertised for bids on construction of streets. Officials in charge of the proposed improvement hope to start the work in the early part of August.

Atlanta, Ga.—City Council has been asked to repave South Pryor St.

Boise, Ida.—Route is to be surveyed for state highway to be constructed to the Arrowrock dam. Appropriation will be asked for when survey is finished.

Alton, Ill.—Godfrey Rd. is to be graded and oiled.

Chicago, Ill.—Preparations for the shipment of road building material to Columbus, N. M., where it is understood army engineers are to begin work immediately on the construction of a 120-mile military road to the United States army camp in Mexico, have been made.

Chicago Heights, Ill.—A pump is to be purchased for the use of the street department.

Freeport, Ill.—Bonds for improvement of highways amounting to \$850,000 will be issued.

Pekin, Ill.—A bond issue of \$1,000,000 is to be asked for to be spent on improving roads.

Quincy, Ill.—Road bonds amounting to \$1,180,000 will be voted on at election in November.

Springfield, Ill.—Capitol Ave., between Second and Tenth Sts., is to be paved with creosoted blocks; when the pavement is laid the street will be widened about 10 ft. between Fourth and Tenth Sts.

Springfield, Ill.—City has decided to pave Jefferson St. from Fourth to Fifth St. with creosoted wood blocks. Brick pavement is to be laid in West Grand Ave.

Springfield, Ill.—Ordinances passed include the laying of a brick pavement in North Grand Ave. from a point 103 ft. east of Eleventh St. to Fifteenth St., and placing of a 12-in. vitrified crock pipe sewer in Reservoir St., from Fourteenth to Fifteenth St. The estimated cost of

pavement is \$11,644.63, and of sewer, \$364.11.

Brazil, Ind.—City Council has been asked to pave West Church with brick from Meridian to Hoosier St. It is also reported that paving plans for pavement of North Depot, West Knight, East Krizan and North Leavitt Sts. are under way.

Fort Wayne, Ind.—Plans have been ordered by board of works for paving of Melita St., from Webster St. to Hoagland Ave. Assessment rolls have been approved for paving Webster St. from Grand to Butler, and Creighton Ave. from Calhoun to Lafayette.

Hartford City, Ind.—The improvement of Commercial St. is under consideration.

Indianapolis, Ind.—Improvements are to be made as follows: First alley east of College Ave. from 19th to 20th; permanent improvement. Sanders St. from Madison to East; permanent improvement. Washington Blvd. from 43rd to 49th; permanent improvement. Central Ave. from 43rd to 50th; curb and brick gutter. Central Ave. from 43rd to 50th; permanent improvement. Washington Blvd. from 43rd to 49th; curb and brick gutter.

Peru, Ind.—Bonds amounting to \$37,200 will be issued for improvement of the Mexico Pike.

Scottsburg, Ind.—The Lexington Bank, of Lexington, Ind., have bought Lexington township gravel road bond issue of \$16,000, paying \$420 premium. There were eight other bidders. Bonds were of \$800 denomination.

Denison, Ia.—Several more streets are to be paved.

Ottumwa, Ia.—Petition to straighten Ninth St. has been granted. It is proposed to oil all leading highways into and out of the city.

Atchison, Kan.—Recommendations of the improvement committee which have been adopted include grading for a sidewalk on Thirteenth St. south of Atchison St.; the construction of a concrete culvert on North Sixth St. between M and N streets, at a cost of \$600; a barricade to be erected along the south side of White Clay Creek between Fourth and Fifth Sts., and a culvert at M and Walnut Sts., to cost \$1,000.

Chanute, Kan.—It has been declared necessary to grade, curb, gutter and pave with vertical fibre or vitrified brick with concrete base of either crushed rock or asphalt filler. East Elm St. from east line of North Lincoln Ave. to west line of North Evergreen Ave.

Albany, Ky.—Surveys have been completed from Albany to the Tennessee line and from Albany to the Wayne County line. The estimates range from \$4,700 to \$5,100 a mile, but county authorities say roads can be built cheaper, and it is proposed to build about 15 miles of like. The Fiscal Court and Commissioner of Public Roads have ordered that road to Wayne County be constructed first.

Bedford, Ky.—Sealed proposals will be received until 11 o'clock p. m., July 3rd, for \$45,000 road and bridge bonds. O. S. Joyce city clerk.

Covington, Ky.—The following improvements with macadam and cement sidewalks are to be made: 26th St., east of Madison Ave.; Sunnyside Ave. and Sixth St., east of Madison Ave.

Hopkinsville, Ky.—Bonds amounting to \$150,000 will be issued for building macadam roads.

Lexington, Ky.—All the bids for the construction of 20 miles of modern roads in Fayette County, which have been opened, were found to be higher than had been expected. The Commissioners have decided to reject all bids except that of the Cary-Reed Co., which was found to be lowest and this bid was taken under consideration.

Louisville, Ky.—Improvements are to be made on Vincemals St. also through Shelby Pl.

Monroe, La.—See Water Supply, streets and roads.

New Orleans, La.—Council extends city limits of Gretna so as to include all of the first and second wards and a greater part of the third.

Cumberland, Md.—Sealed bids will be received to 10 a. m., July 3rd, for \$30,000 road bonds.

Frostburg, Md.—The paving of Bowery St. is under consideration.

Beverly, Mass.—Orders providing for the installation of 283 feet of curbing on Oak and Vine Sts., and appropriating \$900 for the purchase of fire hose, have been passed.

Boston, Mass.—\$1,000,000 has been appropriated by the city council for developing new streets.

Chicopee, Mass.—Efforts are being made to get an appropriation for paving Grattan St. hill with granite blocks.

Northampton, Mass.—Of the \$41,000 bond issue purchased by W. L. Raymond & Co., of Boston, \$30,000 will be used for the construction of permanent highways and \$11,000 for motorization of fire department.

Pittsfield, Mass.—South St. is to be paved at a cost of \$96,000.

Pittsfield, Mass.—South and Melville Sts. are to be paved.

Springfield, Mass.—\$1,500 has been appropriated for construction of a new side wall on Bridge St.

Battle Creek, Mich.—A petition asking the Board of Supervisors to submit a bond proposition for fall election to bond the county for \$800,000 for the purpose of building good roads, is being circulated.

Pontiac, Mich.—A petition is under consideration for the paving of portions of Branch and Wesson Sts.

Saginaw, Mich.—Bonds amounting to \$33,000 for purpose of repairing, rebuilding and preserving Mackinaw St. Bridge, will be issued.

Duluth, Minn.—City Commissioners have ordered Ninth St., from 14th Ave. east to Chester Park, and Eighth St., from Chester Park to Woodland Ave., graded to sub-grade according to a survey prepared by City Engineer Ayres. The estimated cost of sub-grading the streets is \$8,589.55, which will be assessed against the property benefited. The sub-grading of both Ninth and Eighth Sts. will be done so that the thoroughfares will be ready for the laying of tracks and the construction of a bridge over Chester Creek next year.

St. Paul, Minn.—City Council has issued final orders for the construction of Payne Ave.-Egleston St. sewer system, to cost approximately \$30,000. The following streets will be subject to the order: Payne Ave., Cottage to Larpenteur Ave.; Edgerton Avenue, Wheelock Parkway to California St.; Como-Phalen Ave., Payne Ave. to Edgerton Ave.; Nevada St., Payne Ave. to Edgerton; Nebraska Ave., Payne to White Bear Rd.; White Bear Rd., Payne Ave. to Edgerton Ave.; Hoyt Ave., Payne to Edgerton; Iowa Ave., Payne to Edgerton; Idaho Ave., Payne to Edgerton, and California between the same streets. The order also calls for the construction of pumping station with a force main.

St. Paul, Minn.—City Council will consider the paving of Van Buren St. from Hamline to Fairview Aves., and West Minnehaha St. from Lexington to Fairview Aves., and Fairview Ave. from West Minnehaha St. to University Ave.

Joplin, Mo.—A petition to pave Sixth St. from Joplin to Gray St. with Na-

tional paving is to be filed with the City Council.

Berlin, N. H.—The Police Commission have presented a petition for the installation of lighted signs at the following points: Corner Main St. and Glen Ave., corner Main St. and Green St., corner Main St. and Eighth St., corner Main St. and Mason St., corner Green St. and Pleasant St., corner Green St. and Union St., corner Mason St. and Pleasant St.; also for lights in the following places. In alley way in the rear of the Beaudoin and Gilbert blocks, in alley way between Morin block and Crowell plumbing shop, in alley way between Wilson Pharmacy block and Music Hall, in alley way behind Whitcomb's jewelry store. This petition was referred to the committee on electric lights.

Bayonne, N. J.—Dodge St. from Orient to Fifth Sts. is to be paved with sheet asphalt.

Camden, N. J.—Cramer St. is to be paved with asphalt on a six-inch concrete base from 26th to 30th St.

Dunellen, N. J.—It has been voted to advertise for bids for contract of improving North Ave. between Madison Ave. and Washington Ave. with a 2-in. bed of stones and tarvia B, the borough to furnish material.

Elizabeth, N. J.—Bonds amounting to \$66,000 will be issued for reconstruction of Mountain Ave. and Westfield Ave., from Green Brook, Fanwood Twp., to Mountainside Chapel, Mountainside borough, and of St. George Ave., from Colonia Rd., Rahway, to the Middlesex co. line, with a bridge on St. George Ave. They will be sold July 25.

Elizabeth, N. J.—An ordinance has been passed providing for the improvement of South Broad St. from Summer St. to Bayway, by repaving with granite blocks on concrete foundation, and setting of curb in concrete, cost not to exceed \$13,462.90.

Elizabeth, N. J.—Several streets are to be improved by paving.

Millville, N. J.—The attention of the commission has been called to the lack of proper drainage of paved streets at Sassafras and High Sts., High and Pine and High and Broad Sts. It will be necessary to tear out the street at High and Sassafras. Engineer Wade is to attend to the matter.

Newark, N. J.—City Council has been asked to pave Lester Ave.

Newark, N. J.—Survey work for laying wood block pavement on Main St., Orange, has been started by two assistant engineers. When surveying is completed, specifications for modern pavement will be prepared and a date fixed for the reception of bids.

Passaic, N. J.—An ordinance has been passed for resetting the curbs on Van Houten Ave., and the construction of curb and flag where none now exists.

Passaic, N. J.—Blakely Place is to have a new sidewalk and Henry St. is to be graded, curbed and guttered.

Plainfield, N. J.—The city is going to accept East Second St., between Netherwood Ave. and Terrill Rd., and will improve it.

Albany, N. Y.—Secretary Wachsman has been directed to advertise proposals for bids to be opened at the next meeting for the following street improvements: Repaving Central Ave. from Lark St. to Quail St.; improvement of Liebel St. from 475 ft. west of Leonard St., west 430 ft.; improvement of Leedale St. north 300 ft. and Hampton St. from Leedale St. north 330 ft.

Buffalo, N. Y.—The repaving of Scott St. with asphalt, between Main and Washington Sts. has been authorized.

Cornwall, N. Y.—Improvement of roads in different parts of the town is under consideration.

Fredonia, N. Y.—Orchard St. is to be paved from Cleveland Ave. to Eagle St. Town Board will purchase a heavy road scraper.

Hudson, N. Y.—State Highway Commissioner Edwin Dukey has opened bids at Albany for building the Amenia-Pine Plains, part 1, trunk line. The lowest bidder was John Michael & Brother, of Torrington, Conn., whose bid was \$86,447.50.

Oswego, N. Y.—Twenty-six and nine-tenths miles of roads are to be improved at a cost of \$81,000.

Rochester, N. Y.—Genesee Blvd. is to be improved, pavement from Genesee St. to Brooks Ave. at \$88,000 and from Brooks Ave. to Chili Ave. at \$92,000. Final local improvement ordinances adopted are as follows: University Ave. pavement, \$10,-

000; Kansas St. grading, walks and sewer, \$8,000; Keller St. grading, walks and sewer, \$3,700; Longview Ave. grading, walks and sewer, \$6,660; Priem St. pavement, \$4,600, and land to be acquired for a sewer in Augustine St., \$200; Beach Ave. asphalt pavement and sanitary sewer, \$25,000; Urquhart St. asphalt pavement, \$14,000.

Schenectady, N. Y.—Elbert St. is to be paved, graded and curbed.

Syracuse, N. Y.—Local improvement bonds amounting to \$450,800 are to be sold. Euclid Ave. is to be repaved, also East Lafayette St. from South State St. to South Crouse Ave.

Walden, N. Y.—Pavement on Main St. is to be repaved.

Watertown, N. Y.—It has been voted to construct a concrete curb and gutter in South Rutland St. between State and Franklin, and bids may be submitted July 7. Public hearings on the propositions to construct sewers in East Hoard St. and Clinton St. were set for July 7.

Watertown, N. Y.—Further improvements of Coffeen St. have been requested of the Board of Public Works. July 7 is the date for receipt of bids for curbing of Rutland St., between Franklin and State Sts. An offer of the Concrete Steel Engineering Co. to act as consulting engineers for the Court St. bridge work has been accepted.

Bismarck, N. D.—Not less than \$200,000 will be spent on improving roads.

Cincinnati, Ohio.—The County Commissioners and officials of villages through which Hamilton and Springfield pikes pass, together with City Engineer Krug and Councilman Helfferich, are to confer in regard to proposed improvements of these pikes before County Commissioners finally approve or reject plans and specifications submitted by State for improvements.

Coshocton, Ohio.—Sealed proposals will be received until noon July 22, for purchase of bonds amounting to \$26,500 for street improvement and city hospital.

Coshocton, O.—An ordinance providing for the improving of Bank St. has been passed.

Hamilton, Ohio.—Sealed proposals will be received at the office of City Auditor Ernst E. Erb until noon on July 14 for \$5,026.50 worth of North Second St. improvement bonds.

Hamilton, Ohio.—Bonds amounting to \$6,864.50 for sidewalk improvement have been purchased by the First National Bank; local.

Lisbon, Ohio.—The Davies-Bertram Co., Cincinnati, have purchased \$11,000 worth of bonds for the improvement of Lincoln Highway.

London, O.—Sealed bids will be received to noon, July 3, on road bond issue amounting to \$30,164. Allen R. Blacker, Auditor.

Lorain, Ohio.—Erie Ave. is to be widened from 66 to 76 feet.

Salem, Ohio.—Assessing ordinances have been passed for improvement of Franklin Ave. from Broadway to Depot St. and for paving of East School St. from East Fifth to East Seventh ts.

Sandusky, Ohio.—Several streets are to be improved by paving, grading and draining.

Springfield, Ohio.—Euclid Ave. is to be paved in the near future.

Springfield, Ohio.—The construction of a boulevard between Limestone St. and Fountain Ave. is under consideration.

Urbana, O.—High St. is to be repaved and service director is to prepare plans and specifications.

Youngstown, Ohio.—See "Sewerage."

Butler, Pa.—Bonds will be issued to pay for the paving of Saxonbury Rd.

Eugene, Ore.—McKenzie Highway is to be repaved.

Portland, Ore.—County Commissioners will take over part of Hillside Blvd., city agreeing to pay \$48,000 toward pavement of the rest.

Beaver, Pa.—New sidewalks are to be laid on many streets.

Beaver Falls, Pa.—Specifications and plans for the paving of Seventh Ave., between Twentieth and Twenty-seventh Sts. have been approved. Plans were submitted by Engineer Carl S. Donaldson. Bids will be advertised both on gravel and concrete base for the paving. Cost of improvement was estimated by Engineer Donaldson at \$26,000, council to pay one-third. Bids will be received for the improvement July 10.

Chester, Pa.—Ordinances have been granted providing for the widening and improving of several streets by paving.

Coal Dale, Pa.—Two and one-quarter miles of state road is to be constructed.

Pittston, Pa.—County Commissioners will pave 2 miles of highway leading to Wilkes-Barre.

South Bethlehem, Pa.—Bids for the construction of concrete gutters have been rejected, street committee will prepare plans and specifications and advertise for bids.

West Taylor, Pa.—West Taylor Township has sold a bond issue of \$45,000 to Lyon, Singer & Co., of Pittsburgh. West Taylor will use the funds in paving two miles of highway.

Wilkes Barre, Pa.—An ordinance has been passed authorizing the paving and curbing of North Market St.

Wilkes Barre, Pa.—Bonds amounting to \$35,000 will be issued for improvement of streets.

Williamsport, Pa.—Property owners have petitioned City Council to narrow Packer St. from 36 ft. to 30 ft.

Central Falls, R. I.—City Council has appropriated \$7,000 to be used by the highway department.

Lincoln, R. I.—A resolution to appropriate \$11,000 for highways and bridges has been presented.

Narragansett, R. I.—Caswell St., the lower Ocean road and Kenney Ave. are to be repaired.

Providence, R. I.—The following streets are to be curbed: Eighth St. from the center line of Sarah St. westerly to angle near Summit Ave.; Hawkins St. from Admiral St. to Branch Ave.; Georgia Ave. from Allen's Ave. to Fort Ave.; Allen's Ave. from New York Ave. to Ernest St.; Wayland Ave. from the north line of Luzon Ave. to Everett Ave., and Lewis St., from Hope St. to Morris Ave.

Sumter, S. C.—The following petitions have been received: From citizens of Haskell St. asking for cement sidewalks; from Sumter Lighting Co. asking that Manning Ave. from Oakland to A. C. L. railroad be paved with asphalt instead of brick; to extend water mains on Manning Ave.; to pave Magnolia St. from Liberty to Kendrick; to pave Oakland Ave. from Main to Sumter; to place sidewalks on Manning Ave. in addition to street paving, beyond A. C. L. railroad crossing to city limits; to sand-clay Bartlette St. from Sumter to Council, and to put in cement sidewalks; to extend paving on West Liberty St. from Purdy to city limits; to pave Purdy St. between Calhoun and Hampton; to put in cement sidewalks on Wright St. from Liberty to Bartlette; to pave Washington to Dingle St.; from Sumter Brick Works for an improvement of the condition of East Calhoun St. to city limits; from civic league that lamp black be mixed with the cement for sidewalk in order that glare from sidewalks might be obviated. A request has been made that old sidewalk on Washington St. be taken up and a new one be put down. Council decided to inspect street before taking action.

Chattanooga, Tenn.—A petition has been received for extending Wilhoit St. through to Rossville.

Knoxville, Tenn.—A mass meeting will be held June 24, for the purpose of discussing the good road question.

Murfreesboro, Tenn.—The ordinance to pave and park the square and to pave Church and Maple Sts. for one block north and south from the square has been passed by the city commission.

Nashville, Tenn.—Ordinance providing for straightening and improving the Woodland St. bridge has been amended by providing that creosote pine joists shall be installed for strengthening the roadway instead of steel beams.

Beaumont, Tex.—A hard surface highway from Beaumont to Woodville, a distance of approximately 45 miles, was assured when the \$75,000 road bond issue in road district No. 1, of Tyler County, carried.

Corpus Christi, Tex.—On July 8 a special election for bond issue amounting to \$150,000 for road work, will be held. San Patricio County on July 8 will vote on proposal to issue bonds in an amount of \$150,000 for purpose of providing a system of good roads throughout the country.

Corsicana, Tex.—City council has ordered improving of several streets.

El Paso, Tex.—An effort to introduce concrete pavement on streets within the city is being made.

Galveston, Tex.—Bids for the building of sidewalks, curbing, coping on the sea wall boulevard are to be advertised for.

Spokane, Wash.—Two miles of paved highway will be constructed on Green

Bluff prairie, at an approximate cost of \$8,000.

Ogden, Utah.—Twentieth St. is to be improved with new curbs and gutters and pavements.

Covington, Va.—A bond issue amounting to \$100,000 for road improvement has been authorized.

Richmond, Va.—Only one contract for grading alleys and courts was received and it was rejected. Board will readvertise for bids.

Charleston, W. Va.—Bonds amounting to \$175,000 will be issued for main highway construction in Sewell Mountain district.

Charleston, W. Va.—Bids on the paving of twelve blocks of streets in various parts of the city have been opened at the office of City Engineer J. W. Clark. Brown & Floyd appears to have been the lowest bidder on two streets. On the others the bids of R. M. Hudson Paving and Construction Co. and Central Engineering Co. are said to be so close that lowest bidder cannot be determined until all bids are tabulated.

Spokane, Wash.—The city council have ordered the grading, curbing, draining and side and cross walking of Wellesley Ave. from Nevada St. to Addison St. The total cost of improvement will be \$5,500.

Sumner, Wash.—Resolutions of intention for paving of Cherry and Ryan Sts. and their intersections have been passed by Sumner council. W. P. Wood, city engineer.

Saskatoon, Sask., Can.—Only one tender received for street paving; new tenders are called for.

BIDS RECEIVED AND CONTRACTS AWARDED.

*Indicates Contracts Awarded.

Tucson, Ariz.—*Warren Bros. Paving Co., for constructing 26 miles Ajo road at approximately \$99,600.

Dunsmuir, Cal.—*T. M. Burns of Sacramento for paving Florence Ave. through Dunsmuir.

Stockton, Cal.—*John M. Davis for sprinkling the streets of Woodbridge.

Danbury, Conn.—*Charles J. Eastburn Co., Philadelphia, Pa., for paving Main St. with amiesite between the bridge and the railroad tracks at \$1.05 per square yard, and on Delay St. for \$1.75 per square yard.

Washington, D. C.—*Warner-Quinlan Asphalt Co., Syracuse, N. Y., for resurfacing asphalt roadways in the District of Columbia, at \$1.51 per square yard.

Orlando, Fla.—*The Southern Clay Manufacturing Co., for building the gap in brick road between Orlando and Sanford.

Sarasota, Fla.—Work will be started in a few days on the \$250,000 road and bridge system for Sarasota-Venice district of Manatee county. This will give about fifty miles of good roads, of which about thirty will be sand-asphalt with concrete base. Among the bridges will be one over Sarasota sound to gulf beach on Sarasota key. *Continental Public Works Company, which has the Lake county contract for thirty miles of sand-asphalt road on clay base. The bridges will be built by the *Luen Bridge Company, of York, Pa.

St. Augustine, Fla.—*Georgia Engineering Co. for the Palatka-East Palatka-Federal Point-San Mateo-Peniel and Rice Creek roads (known as the Palatka Special Tax Road District), at \$7,900 per mile.

Ottawa, Ill.—*C. S. Ayers, for improving Norris St. including excavation and hauling of crushed rock. His bid for excavation was 50 cts. per cu. yd., and for crushed rock \$1.35 per cu. yd.

Quincy, Ill.—*The Clough Construction Co. for building granitoid sidewalks on both sides of the public library, Fourth and Maine, and at 20th to Jersey. Their bid on the library walk was 13 3-4 cents per square foot, and on the other walk 14 cents per square foot. The bids of the other contractors on the library walk were: Theodore Vonder Haar, 15 1-3 cents per square foot; Meyer & Peters, 14 1/2 cents per square foot; Menke Stone & Lime Co., 15c. per square foot; Hufnagel Construction Co., 14 3-4c. per square foot. On the walk at 20th and Jersey the bids were: Vonder Haar, 17c. per square foot; Meyer & Peters, 15c. per square foot. The new walk at 20th and Jersey is 45 feet long and six feet wide.

Fowler, Ind.—*Thomas Calaban for the construction of the Kretzmire gravel road in Union township, at \$20,566.94, and *Evans & Van Natta, for Gress road in York township, for \$4,890.

Franklin, Ind.—*Brown & Pitcher, of Johnson County, for the construction of the Lockwood road on the Johnson and Marion line, for \$11,740; *Barnett & Taylor, for the Baker road, for \$8,819.

Indianapolis, Ind.—*Norman & Manwaring, Tangier, Ind., for a gravel road in Liberty Twp., Parke Co., at \$4,447.

Indianapolis, Ind.—*Brown-Pitcher Co., Franklin, for building 2 1/2 miles gravel road to be known as the Lockwood road, at \$11,826.

Indianapolis, Ind.—Bids for paving several streets as follows: American Construction Co., "first grade" asphalt, \$3.63 a lineal foot, and bituminous concrete, using "first grade" asphalt, \$3.38 a lineal foot, and the Republic Construction Co., "first grade" asphalt, \$3.67 a lineal foot, and bituminous concrete, using "first grade" asphalt, \$3.41.

Kokomo, Ind.—Bids received as follows. Delphos St. walks were: Landon & Shinn, 13c.; L. F. Record, 14c. Virginia Ave.: J. H. Watson & Co., Veederburg brick, \$1.561; reinforced concrete, \$1.261; Ironstone brick, \$1.561. L. F. Record, Metropolitan brick, \$1.589; Wabash brick, \$1.550; Brazil brick, \$1.550; reinforced concrete, \$1.325. Bids on the Myrtle and Brandon St. walks were: Kokomo Construction Co., 14c.; Landon & Shinn, 14c.; L. F. Record, 14 1/2c.

Mount Vernon, Ind.—*The Mt. Vernon Construction Co., for constructing 6 miles concrete streets in Vincennes, at \$90,445.

Salem, Ind.—*Wm. D. Davis, for construction Salem-Fredericksburg road, at \$6,350; *Alvah Chastain for construction Salem-Flowers-Gap road, at \$9,625; Fred Simpson, for construction Old Salem-Corydon road, at \$9,997; also Harristown road at \$5,300; *Loran A. Temple for construction of Salem-Greenville road at \$5,399.

Tell City, Ind.—*Cornelius Paulin Co., for two miles of rock roads in Tobin township, at \$10,722.80.

Vincennes, Ind.—*Arkansas Construction Co. of Mt. Vernon, for building of 2.73 miles of Ewing road for \$47,353.89, also Elmer Cantwell road, 2.89 miles, for \$43,091.90. *The S. R. Adams Co., Princeton, Ind., for construction of H. D. Simpson road, 1.60 mile, at \$23,819.

Britt, Ia.—*J. S. McLoughlin & Sons, Red Oak, Ia., for 36,000 sq. yds. sheet asphalt on a 5-in. base, at \$1.69 per sq. yd., also various forms of curb and curb and gutter.

Atchison, Kan.—*Thomas Beattie, of Atchison, for constructing a concrete highway on the first mile of the Catholic cemetery road at \$11,868. Beattie's bid was lowest on concrete, being \$1.22 per square yard, and highest on grading, 40c. per cubic yard, but total shows his figures lowest. There were two other bidders.

Covington, Ky.—*Sullivan & McKenne, for the improvement of Glenway Ave.

Louisville, Ky.—*John Howe for repairing granitoid pavements on Culbertson Ave. at \$550.

Louisville, Ky.—Only four bids were received on the Fayette road and they were higher than expected: Carey-Reed Co., Southern Bitulithic Co., Nashville; Southern Asphaltolene Co., and Wm. P. McDonald, Mt. Vernon, N. Y.

Legrange, Ky.—Bids have been received for macadam resurfacing on 4.7 miles as follows: *Alex Stoepfer \$1.49 a cubic yard; Charles Ochsnur, Jr., \$1.65; Edgar Cox and William Cox \$2.13; W. E. McKenzie, \$2.10.

Middlesboro, Ky.—*J. A. Kreiss Co. of Knoxville, for construction of the Harlan-Bell road, from Harlan to Wallins Creek, and Harlan-Cawood road, from Harlan to Farmer's Mill on Martin's Fork. The bid at \$51,213.70 and for Harlan-Cawood road, \$21,843.13. The work was sub-let by the Kreiss Co. to a Mr. Condon, of Knoxville.

Cape Girardeau, Md.—*John H. Rouse, for paving highways, at \$1.53 per sq. yd. for reinforced concrete.

Pittsfield, Mass.—*C. Ferreullo, Boston, for changes in dangerous curve on Monument mountain road, at \$30,900.

New Brunswick, N. J.—*H. M. Scott Contracting Co. of Cranbury, for macadamizing New Brunswick and Cranbury turnpike, \$64,472.67. The state has set aside \$30,000 from motor vehicle fund for this work and county will issue bonds for \$30,000 to cover its share, bids on bonds to be received at 10.30 o'clock, June 30. The board also adopted a resolution providing for an issue of road improvement bonds amounting to \$31,000 to meet the county's share of Woodbridge-New Brunswick turnpike pavement on

section four. The total cost of this work will be \$106,284.55.

Passaic, N. J.—Bids were received for the macadamizing with tarvia pavement of Union Ave. and Maple St. as follows: *De Vogel & Co., Passaic, \$2,256; Union Building & Construction Co., Passaic, \$2,302; Frank Van Roden, \$2,435. *Frank Van Roden, for building new culverts at Union Ave. and Hackensack St.

Perth Amboy, N. J.—The local firm of Meagher & Smith was the lower bidder upon a proposal to grade and otherwise improve surroundings of municipal light plant, offer being \$1,995. John W. Heller, only other bidder, offer was \$2,361.

Perth Amboy, N. J.—*H. N. Scott Construction Co., Cranbury, for repairs on Cranbury turnpike at \$64,472.67. Other bidders were: T. Harry Riddle, Perth Amboy, \$64,752; Liddle & Pfeiffer, Local, \$65,819.40; Manwaring & Cummins, Philadelphia, Pa., \$66,982.91. *Thomas F. Dunigan, wood bridge for Woodbridge, New Brunswick turnpike at \$106,284.55.

Lockport, N. Y.—*Harry E. Whitney, for paving Pound St. with asphalt block at \$6,091; other bidders were: C. N. Stainthorpe & Co., \$6,678.92; C. B. Whitmore Co., \$7,240.

Monticello, N. Y.—Bids received on 560 square yards concrete pavement as follows: Jackson Bros., Cudebackville, at \$5,417; Fallkill Construction Co., Poughkeepsie, at \$5,402.

Syracuse, N. Y.—Bids have been received by the board of contract and supply for repaving South Warren St. from East Genesee St. to East Jefferson St., and South Salina St. from Adams St. to Burt St. and for resurfacing Midland Ave. from West Castle St. to West Colvin St. The proposals are being canvassed in the bureau of engineering.

Coshocton, O.—The Coshocton National bank was highest bidder and was awarded \$12,500 worth of city bonds, bids as follows: \$9,000 Chestnut St. Paving Bonds. People's bank, \$9,045; Central Bank, \$9,069.24; Coshocton National, \$9,101.25; Commercial National, \$9,075. \$500 Chestnut St. Sanitary Sewer Bonds. People's bank, \$501; Central bank \$500; Coshocton National, \$503.77; Commercial National, \$501.05. \$3,000 Chestnut St. Storm Sewer Bonds. People's bank, \$3,012; Central, \$3,016.23; Coshocton National, \$3,021.55; Commercial National, \$3,011.

Eaton, Ohio.—*Strodbeck Bros., Middletown, Ohio, for paving with brick, \$81,000 at the rate of \$1.90 per square yard. Barron St. will be paved the entire length.

Eaton, Ohio.—Bids received on paving: Bigler Bros. of Middletown, bid \$1.89 and \$1.95 per square yard on brick paving; Clifton Hoolihan of Dayton, asphaltic concrete, at \$1.49 and \$1.57 per square yard. Other firms submitting bids which is estimated to cost approximately \$80,000, are Andrews Asphalt Paving Co., Hamilton; Federal Paving Co., Middletown; Payne & Mikesell, Eaton; S. M. Burnett, Rockford; Williston Construction Co., Chicago; Cleveland-Trinidad Co., Cleveland.

Tiffin, Ohio.—Section "A" of the Tiffin-Fremont road is to be piked this year; 4.37 miles is to be piked. B. D. Knepper's bid was \$39,996.63 for waterbound macadam or \$50,916.63 for bituminous macadam. The first is bid to be accepted. The engineer's estimate for a waterbound road was \$46,400 and for bituminous macadam \$57,700.

Chester, Pa.—*Union Paving Co., for paving the following streets: Edgmont Ave., 24th to city line; Caldwell St., 3d to 6th Sts.; Wilson St., Front to 6th Sts.; 11th St., Highland Ave. to Warwick St.; Hewes Ave., Highland Ave. to Warwick St.; 9th St., Reaney to Engle Sts.; 24th St., Madison to Crosby Sts.; Butler St., 10th to 11th Sts.; 11th St., Butler to Kerlin Sts.; Booth St., 2d to 3d Sts.; 9th St., Pusey to Lloyd Sts.; 10th St., Parker to Kerlin Sts.; Howard St., 23d to 24th Sts.; Dock St., 2d to 3d Sts.; 20th St., Hyatt St. to Melrose Ave.; Rose St., Walnut to Chestnut Sts.; 4th St., Central Ave. to Edwards Sts.; Madison St., 23d to 24th Sts.; Fulton St., 9th to 10th Sts.; Edgmont Ave., 6th to 9th Sts.

Pittsburgh, Pa.—Seventeen improved roads of county are to be reconstructed and resurfaced at a total cost of \$404,768.95. *Booth & Flinn Co., Ltd., 16 of the 17 contracts. They cover 28.5 miles. Fourteen of them are to be constructed of asphalt or concrete, and two of asphaltic concrete, and brick surface. That company's bids were as follows: Lowries Run and Mt. Nebo Rd., \$25,606; Perrysville No. 1, \$23,462.50; Scaife Rd., \$19,-

447.80; Thompson Run, \$17,379.50; Troy Hill, \$15,591.50; Millerstown and Culmer-ville, \$34,533; Freeport No. 3, \$17,517; Freeport No. 4, \$28,139; Unity and Trestle, \$12,180.95; Saltsburg, \$15,239.70; Crab Hallow, \$25,751.80; Library, \$28,019.50; McCoy Rd., \$12,518.30; Beaver grade, \$24,559; Coraopolis and Carnot, \$15,341; Steubenville Pike and Enlow, \$18,739.70, a total to that firm of \$334,999.25.

*Thomas Cronin Co., for reconstruction of the Steubenville Pike extension Rd., 1.5 mile, with asphaltic concrete and slag foundation, for \$21,023.20. Contract for furnishing 29,000 tons of ballast and screenings were let to three firms: *Clydesdale Stone Co., who bid \$15,068.80 for stone; *J. M. McGuire & Co., who bid \$7,191.65 for stone, and the *Duesne Slag Products Co., who bid \$7,707.55 for slag. For hauling the latter material, the awards were made to: *R. H. Cunningham & Sons Co., *Frank Bryan, *W. H. Johnson and the *Central Supply Co., the total amount being \$18,769.50. All of this macadam resur-facing, 17 miles of it, will be done by the county road department this year.

Sharpsville, Pa.—*Wm McIntyre Sons Co., Sharon, Pa., for paving 6,800 sq. yds. tarvia pavement at \$1.75 per sq. yd. Other bids of \$1.97 and \$2.07 were received.

Galveston, Tex.—For vitrified paving blocks laid on four-inch concrete base, cement grout filler, with five-year main-tenance guarantee, Cleveland Trinidad Paving Co. bid the lowest, being \$66,120.16. P. J. Vautrin's bid of \$70,021.43 being second. For wood block pavement with a five-year maintenance contract, the low bid of the Cleveland Trinidad concern is \$75,376.41, the bid of the Southern Paving Co., \$80,039.18, being second. It is not believed that any of the bids on asphalt or composi-tion paving will be seriously considered for proposed work on Avenue H from 35th to 46th, 37th from Strand to Church and 35th from Church to H.

Galveston, Tex.—Bids on paving and coping on municipal building grounds as follows: H. J. Hetkes, Ed. Ringh. T. Par-sons and Freund & Quay.

Galveston, Tex.—Representatives of firms which submitted bids on 17 blocks of new paving to be constructed in the West End, were given an opportunity to present the merits of their respective paving materials before the City Com-mission, particularly because there were bids on certain composition paving ma-terial not hitherto used here, and be-cause the Commissioners desired to know more about such materials. For the pro-posed new paving—on 35th St. from Church St. to Ave. H; 37th from Strand to Church, and Ave. H from 35th to 46th—there were bids on such materials as asphalt, bitulithic, granitoid, wood block and brick. The bidders included: Texas Granitoid Co., San Antonio; Southern Paving Co., Dallas; Cleveland Trinidad Paving Co., Cleveland, O.; Texas Bitu-lithic Co., Dallas; P. J. Vautrin, Galves-ton; Kaw Paving Co., Topeka, Kan.; Freund & Quay, Galveston, and the Eu-reka Paving Co., Houston.

Ogden, Utah.—*J. P. O'Neill Construc-tion Co., for paving Orchard Ave. between 25th and 26th Sts., at \$3,514.69.

Richmond, Va.—*J. J. Curley, for gran-olitic sidewalk paving, in Fairmount Ave., a small section of Broad St., on Church Hill; on Grove Ave. and on Bever-ly St. Total cost \$3,598.85. And for graveling the Richmond and Manchester turnpike from Maury St. to the new city limits, at \$3,526. The gravel surface is to be 8 ins. deep and road 18 ft. wide.

Charlestown, W. Va.—The following is a list of the streets to be paved, the material to be used: Hansford St., sheet asphalt; *R. M. Hudson Paving Co., \$1.85 sq. yd.; also North Rand St. Trinidad as-phalt, \$1.80 sq. yd.; Crescent road, as-phaltic concrete, \$2 sq. yd.; Ash St., Trin-idad asphalt, \$1.96 sq. yd.; South Ave., asphaltic concrete, \$1.87 a sq. yd.; Roane St., asphaltic concrete, \$1.84 sq. yd.; Bridge St., Trinidad asphalt, \$1.85 sq. yd.; Indiana Ave., *Central Engineering Co., Trinidad asphalt, \$2 sq. yd.; Pied-mont St., Trinidad asphalt, \$2.03 sq. yd.

North Yakima, Wash.—Bids received for bituminous pavement: Washington Paving Co., Seattle, approximately \$54,000.

Olympia, Wash.—For graveling 6.8 miles of the Inland Empire highway from Spangle north, *J. E. Cunningham of Spo-kane for \$1.08 per cubic yard, a total of \$7,344. Five bids were opened. There were no bids for work on state highway from Vancouver to LaCenter.

Spokane, Wash.—*J. E. Cunningham of Spokane, for surfacing with gravel seven miles of the Inland Empire high-way from Spangle northward to Spo-kane, for \$1.08 per cubic yard. Other bidders as follows: H. C. Root, Spokane, \$7,616; Carlson Chindahl, Spokane, \$10,200; Oregon Road Oiling Company, Port-land, \$8,092; W. G. Mulligan, Spokane, \$12,162. There were no bidders on the contract for surfacing one and a half miles of Pacific highway from Van-couver north.

Tacoma, Wash.—*Andrew Keto & Son, to improve Stearns and Bunker Creek road near Adna, at \$1,075. The only other bid was submitted by Anderson & Co.

Vancouver, Wash.—For constructing 4 miles water bound macadam road, *O. D. Wolfe, Washougal, Wash., No. 3A, at \$7,896.50; *Federal Construction Co., Vancouver, Wash., No. 6, at \$7,998.20, and No. 7 at \$7,619.42.

Janesville, Wis.—Bids received for paving 14,458 sq. yds. asphalt macadam as follows: Brown & Connors, local, at \$16,715.30; Gund Graham Co., Freeport, Ill., at \$17,441.22; P. W. Ryan & Son, local, at \$18,128.70.

Oshkosh, Wis.—*Chris Johnson, Osh-kosh, for paving with macadam, 90 and 96 cts.; concrete curbs and gutters, 49 cts. Other bidder: Larson Construction Co., local, paving, \$1.15 and \$1.17; con-crete curbs and gutters, 53 cts.

Superior, Wis.—Bids received for pav-ing North 21st St. from Hammond to Baxter Ave., as follows: T. G. Laugh-ren, gravel, \$4,261.41; rock, \$4,540.68. John Diffor, gravel, \$4,464.12; rock, \$4,716.02. Palmer Construction Co., gravel, \$5,606.99; rock, \$5,732.94.

Superior, Wis.—At a meeting the board of public works awarded contracts for the construction of 12 miles of cement sidewalks costing approximately \$30,000. Following were the bids in cents per sq. ft. for paving: Third, Fourth and Fifth wards, *Russell Construction Co., 10.9; Peter Bergman, 12½; Ed. Johnson, 11.24; Magnus Peterson, 11; Vic Nelson, 13¼. Eighth ward, Axel Holm, 12.9; Berg & Runsten, 12; Magnus Peterson, 12½; Rus-sell Construction Co., 13.9; *Ed. John-son, 11.73; Victor Nelson, 11.74. Ninth ward, Magnus Peterson, 13¼; A. Skam-sar, 13.19; *Ed. Johnson, 12.49; Peter Bergman, 15¼; Victor Nelson, 13.74. Sev-enth ward, Magnus Peterson, 12½; *Ed. Johnson, 11.99; A. Skamser, 13.9; Berg & Runsten, 12¼; Victor Nelson, 12.24. First ward, *Ed. Swanson, 11.24; Palmer Con-struction Co., 11.8; Magnus Peterson, 13¼; Victor Nelson, 13. Second ward, Palmer Construction Co., 11.7; *Ed. Swanson, 11.23; Russell Construction Co., 12.9; Magnus Peterson, 14. Tenth ward, Peter Bergman, 14¼; *Ed. Swanson, 11.49; Palmer Construction Co., 12.4; Magnus Peterson, 13¼; Victor Nelson, 14.76.

West Allis, Wis.—*Dean Construction Co., Milwaukee, for paving 6,343.58 sq. yds. concrete highway at \$11,684.54. Other bidders were: A. E. Petzlaff, Mil-waukee, at \$11,177.31; C. J. Mority, local, at \$11,814.03, and Kroening Construction Co., Milwaukee, at \$11,941.73.

SEWERAGE

Berkley, Cal.—See "Streets & Roads."

Los Angeles, Cal.—Ordinances provid-ing for the construction of sewers in several streets have been passed.

Sacramento, Cal.—The improvement of several streets has been ordered by the city council, by curbing and construc-tion of sewers.

Stockton, Cal.—An ordinance has been passed to allow purchase by city of property and a right of way from the Tuxedo Land Co. for the sum of \$3,500, the land to be used for a sewage dis-posal plant.

Stockton, Cal.—Plans and specifica-tions for construction of lateral sewers in North Stockton have been adopted by the council. A map of the district to be assessed has also been adopted. The district includes Blain's addition, Brown's addition and Cognoro's sub-di- vision.

Rome, Ga.—A crematory to dispose of sewerage at a cost of \$4,000 may be built.

Canton, Ill.—The storm sewer north of the cemetery is to be repaired.

Springfield, Ill.—A sewer is to be con-structed in Clear Lake road from 18th St. east to northwest corner Bergen Park. It will be 18-in. pipe, the exten-

sion through the park will be at least 30 ins. in diameter.

Springfield, Ill.—See "Streets and Roads."

Independence, Kan.—An ordinance has been passed providing for a lateral sewer on Magnolia St.

Pittsburg, Kan.—A storm sewer is to be installed on North Broadway.

Pittsburg, Kan.—The engineer has been instructed to prepare esti-mates on cost for installing a drainage sewer east of Broadway between 7th and 16th Sts. The following paving ordinances have been passed: Olive St. between Jefferson and Webster; Web-ster Ave. between College and Catalpa; Catalpa St. between Jefferson and Quincy; Olive St. between 4th and the Frisco.

Covington, Ky.—A 48-in. sewer will be laid in 29th St. to Randolph, thence along the street to the corporation line. The sewer will empty into Blanklick Creek.

Paducah, Ky.—General plans and spec-ifications are being prepared for drain-age of Mayfield creek, which will be one of the largest projects of the kind ever undertaken in Western Kentucky. John Ed. Johnson, a civil engineer, is in charge of the plans. Field engineers are at work making a more complete survey of drainage district. The Drainage Com-mittee will not be ready to advertise for bids before early fall. The project will cost approximately \$200,000 and will re-deem about 40,000 acres of fine land.

Boston, Mass.—A sewer will be in-stalled on Brookline Ave., between Au-dubon road and Jersey St. at a cost of \$20,424. The sewer will be installed in connection with the construction of a new bridge over the tracks of the New Haven road.

Pittsfield, Mass.—A sewer main is to be constructed in Fifth St. from Lake Ave.

Springfield, Mass.—It has been voted to lay 165 ft. of sewer main in Fifth St. and in Parkside Ave. from Newell St. to Ventura St.

Springfield, Mass.—\$7,000 has been ap-propriated for the construction of a sewer system in the western part of the town.

Menominee, Mich.—City intends to lay a sewer on Martha Ave. from Frederick St. to Paalzow St. the cost and expense to be paid in part by special assessment.

Pontiac, Mich.—Engineer Fisher has presented an estimate of \$409.60 as cost of a lateral sewer in Raeburn St. from Sanford St. 380 ft. easterly. Objections to construction will be heard on July 10.

Sault Saint Marie, Mich.—Bids on con-struction of a new sewer on Portage Ave. from Bingham Ave. to Magazine St. and on Cedar St. have been rejected by the board of public works as it is be-lieved that bids are too high. It has been decided to have the city lay sewer on Portage Ave. New bids will be ask-ed for on Cedar St. work. The new sewer will be put in on Portage Ave. in anticipation of paving the street this year.

St. Cloud, Minn.—An order providing for all sewer and water connections on First St. south from Fourth to Third Ave., Third Ave. from First St. south to Seventh St. south, Seventh St. from Third Ave. to First Ave. from Seventh St. to the bridge will be issued by the City Commissioners.

St. Paul, Minn.—It is proposed to im-prove several streets by constructing storm water sewers, curbing and pav-ing.

Joplin, Mo.—The advisability of con-structing a storm sewer to drain a large section in the northwest part of city has been discussed by city council, following an announcement by J. B. Hodgdon, com-missioner of streets and public improve-ments, that he is preparing an estimate of the cost. The cost will be more than \$15,000. The section in question is bounded on the east by Wall St. and on the south by Third St.

Kansas City, Mo.—Work on the Blue Valley sewer will cost \$1,500,000. It will extend from Swope Park to the Missouri River. City engineers are now making surveys and drawing plans.

Camden, N. J.—An Ordinance has been granted authorizing the construction of sewers, culverts or drains in and along Fremont St. from Garden St. to Alberta St.; Alberta St. from Fremont St. to Federal St.; Federal St. from Alberta St. to Thirty-second St.; Elm St. from Point St. to Delaware Ave., and Ninth St. from Ferry Ave. to Jefferson Ave.

Cranford, N. J.—It is estimated that the proposed joint trunk sewer system and disposal plant would cost the various towns interested approximately as follows: Rahway, \$200,000; Cranford, \$103,000; Garwood, \$34,000; Kenilworth, \$21,000; Roselle Park, \$6,200; Union, \$66,000; Springfield, \$33,000, and South Orange, \$104,000.

Dunellen, N. J.—J. S. Rippel & Co., of Newark, \$45,000 sewerage system bonds at bid \$102,263. Other bidders in order were: H. L. Crawford Co., \$162.19; Atwater & Wells, \$101.67; M. M. Freeman & Co., \$101.625; Hornblower & Weeks, \$101.54; George B. Gibbons & Co., \$101.39; Harris, Forbes & Co., \$101.342.

Newark, N. J.—All bids for the construction of the Lawrence St. branch of the intercepting sewer in Paterson have been rejected as excessive. Bids will be readvertised.

Albany, N. Y.—Appropriations wanted for \$20,000 for continuing improvement of Beaver park, \$100 for constructing a catch basin at Delaware and Second Aves.; city council authorized the laying of a sewer in Grand St., from Elm St. to south of Wilbur St.; directed the cleaning and repair of sewer in Steuben St. from Broadway to the Albany basin, and authorized the construction of a vault under the sidewalk at 2 to 10 North Pearl St.

Binghamton, N. Y.—It is the intention of the council to construct a sewer on Oliver St. and North Cleveland Ave.

Cooperstown, N. Y.—The trustees of the village of Cooperstown have voted to issue bonds amounting to \$24,000 to pay for construction of new sewer system.

Oriskany, N. Y.—Utica Trust & Deposit Co. have purchased sewer bonds amounting to \$40,000.

Rochester, N. Y.—See "Streets and Roads."

Watertown, N. Y.—See "Streets and Roads."

Winston-Salem, N. C.—Two wagons and two horses are to be purchased, one wagon to be used to flush and clean sewers, and the other to collect dead animals to convey them to incinerating plant.

Hamilton, O.—Proper sewerage in Gordon Ave. is asked for by the residents of that street.

Hamilton, O.—Sealed proposals will be received at the office of City Auditor Ernest E. Erb until noon on July 14th for \$18,045.80 worth of East Hamilton sanitary sewer district No. 1 bonds.

Lorain, O.—Iowa Ave. between East Erie Ave. and D St. is to be improved by the construction of a lateral sanitary sewer.

Lorain, O.—Sewers are ordered by the city council on Iowa, Delaware, Florida and Denver Aves. and in Waverly Place.

Middletown, O.—Calumet Ave. is to be improved by construction of tile storm and sanitary sewer from Curtis Ave. to Grove Ave.

Niles, O.—City Engineer Howard Turner has received word that plans for Niles' intercepting sewer will be prepared and formally submitted to state board of health at its next meeting which will be held on August 2.

Springfield, O.—Initial legislative steps will be taken by City Commission on construction of North side sewer system under plans completed recently by engineering department. The estimated cost is placed at about \$31,000.

Warren, O.—A sanitary trunk sewer will be constructed in Sewer District No. 3.

Elmwood City, Pa.—A new sanitary sewer will be built on Spruce Way between 7th and 9th Sts.

Erie, Pa.—City Engineer Briggs will prepare data for the construction of a storm water sewer in 19th St. from Mill Creek to German St.

Erie, Pa.—An ordinance providing for the construction of a 12-in. diameter lateral sanitary sewer in 30th St., has been passed.

Johnstown, Pa.—Plans are being prepared for sewers as follows: Oak, Wood, and Bell alley in the Seventh ward; Garfield St. and Laurel Ave. in the 20th ward; Jacoby St., Homestead Ave. and Fourth alley in the 17th ward; Good alley in the Third ward; Bradley alley in the 16th ward; Blenny alley in the 18th ward; Bradley, Brallier and Boyle alleys in the 15th ward; Hahn alley in the Sixth ward, and Conrad alley in the Fifth ward. The majority of these plans are for lateral sewers, but in some instances submains are being

designed, which will become a part of the general sanitary sewer system. A portion of the Walnut Grove submain, running through Bell alley, has already been contracted for.

Lansdale, Pa.—Town council has been notified by state health commission that a new sewer system must be installed at once. The estimated cost is \$80,500.

Central Falls, R. I.—Four thousand dollars has been appropriated for sewers.

Knoxville, Tenn.—The laying of sewers in several parts of the city is under consideration.

Austin, Tex.—Mineral Wells is contemplating the construction of a sanitary sewer system.

Galveston, Tex.—The Blodgett Construction Co., Truehart & Jackson, Freund & Quay, and Hunter & Hunter made bids on the construction of reinforced concrete drain and appurtenances on 41st St. from Ave. F to I and on vitrified pipe drain and appurtenances along Ave. H from 35th to 46th.

Lockhart, Tex.—Modern sewer system is to be installed. Henry E. Elrod, consulting engineer.

Mineral Wells, Tex.—Bonds amounting to \$23,000 for the construction of a sewerage disposal plant have been sold.

Victoria, Tex.—A bond issue amounting to \$35,000 will be issued for a sewerage disposal plant.

Janesville, Wis.—City Council has accepted the plans for drainage system as prepared by City Engineer C. V. Kerch.

Sheboygan, Wis.—A catch basin has been ordered at the southwest corner of South River and New York Ave.

BIDS RECEIVED AND CONTRACTS AWARDED.

*Indicates Contracts Awarded.

Stockton, Cal.—Five bidders made proposals for the big job which Leech & De Camp had abandoned. This work is the construction of sanitary main sewers along Fair Oaks Ave. from Marsh St. to East St.; along East St. to Oak St.; along Oak St. to West St.; along West St. to Smith's canal, with branch on Union St. from Acacia St. to Oak St. City Engineer Compton's estimate amounted to \$48,577.41. The bidders and their proposals were as follows: Tibbitts Pacific Co., \$61,290.11; Chambers & Heafey, \$53,899.07; Michael Murphy, \$62,581.89; Frank C. McIntire, \$49,450.77; Frank S. Ostrander, \$59,130.98. Bids for construction of storm sewers along Scotts Ave., Fisher St. and John St. in the Fisher addition were as follows: City engineer's estimate, \$1,762.75; J. J. Callisch Co., \$174.49; Chambers & Heafey, \$1,504.32; Fred Lefler, \$1,605.05; Frank McIntire, \$1,460; W. S. Gause, \$1,410.80; W. F. Edwards, \$1,491.58.

Waterbury, Conn.—Bids have been received for building North Main St. Sanitary sewer as follows: Barbour & D'Aurio of Waterbury, \$5.75 a lineal foot, and \$88 for manholes; Thomas F. Maher of 883 Orange St., New Haven, \$5 a lineal foot; Archie Pisana of 257 Bank St., Waterbury, \$4.65 a lineal foot, and \$95 for each manhole, and Henry Spinach Co. of Waterbury, \$4.38 a lineal foot and \$78 for each manhole.

Portland, Me.—Bids have been opened at the office of department of public works, and in list of six bidders, *Giuseppe D'Ascalo, for construction of a sewer on Island Ave. and Elizabeth St., Peaks Island, at \$491.49. The other bids were as follows: L. Profenno-P. Ferante Co., \$531.46; Rinaldo DePrerantonio, \$577.90; Giuseppe Casale, \$661.19; Carmine Ventresco, \$724.79; Camillo Profenno, \$843.95.

Roselle, N. J.—*P. Camillo, Westfield, for construction of sewer in 12th and Rivington Sts., at \$377. Other bidders were Matthew Wade \$738, and T. Foster Callahan, \$558.

Coshocton, O.—See street and roads.

Urbana, Ohio.—*Geyer & Grimes, local, for constructing storm sewer in East Court St. at \$2,102.62. Bids for storm sewer between Scioto St. and East Church St. are as follows: Boyd & Cook, \$2,571; Fair & Dwyer, Greenville, \$2,835; Chas. F. Smith & Co., Dayton, \$2,860; Patrick Caffery, Springfield, \$4,352. Water St. storm sewer, *Patrick Caffery, Springfield, \$3,395; Miami St. sanitary sewer, from Oakland St. to Edgewood Ave., *Krumholz & Hounker, Springfield, \$2,862.50; Locust St. storm sewer between Lincoln Ave. and East Ward St., *J. A. Swingle Contracting Co., Zanesville, \$2,622.50; W. Court St. storm sewer, same firm, \$1,656.60.

Youngstown, O.—Bids have been received on the following improvements:

Sewering Japan St. from Cooper to Hunter; paving intersection of Glenwood and Mahoning Ave.; sewerage Worthington St. from Federal to Thurman and Thurman from Worthington to Rayen; erecting Ridge Ave. retaining wall; painting Spring Common and Center St. viaduct; grading and sewerage Redonda road from lot 27625 to Felicia St.; paving Parnell from Alexander to Powersdale; paving Kendall Ave. from Glenwood to Hillman; paving Hezlep St. from Wells to Crescent; sewerage Carlyle and Abbott Sts. from Wirt St., 350 ft. west, and sewerage Gladstone St. from east line of Lincoln Park to Blaine Ave.

South Bethlehem, Pa.—Bids have been received for the construction of 1,000 ft. of sewers from S. L. Cypress, Philip Urals and Anthony Madalena.

Williamsport, Pa.—Bids on construction of storm sewer on Packer St., Joseph McCadden, local, at \$1,044.87.

Nashville, Tenn.—Bids received for building a sewer in 16th Ave. and alleys, Nos. 573 and 573½ was awarded to J. L. Curtis & Co. on a bid of \$408.05. Other bids received were as follows: J. B. Hughes & Co., \$555.46; J. T. Allen & Co., \$550; John Broderick, \$436.50, and J. W. Quinn, \$467.

Port Arthur, Tex.—Bids have been opened by city commissioners for work on second section of city drainage and storm protection system, which is to include the pumping part of work and installation of power devices. Bids for construction of an abattoir costing \$6,000 were also opened. No contract has been let and none may be let on these bids.

Milwaukee, Wis.—*Wisconsin Tunnel and Construction Co. for first section of the Menomonee low level intercepting sewer at a cost of \$268,172.75 and to the James Kennedy Co. of Fargo, N. D., for the second section at a cost of \$248,439. This sewer extends from the foot of Park St. to the 27th St. viaduct.

WATER SUPPLY

Denver, Colo.—An ordinance providing a fire hydrant on the mains of the Denver Union Water Co., has been passed.

Waukegan, Ill.—The sum of \$160,000 has been appropriated for installation of filter plant.

Cola, Ia.—An election will be held to decide the question of whether or not bonds amounting to \$12,000 shall be issued for the purpose of installing a water system.

Monroe, La.—West Monroe voted a \$45,000 bond issue yesterday for constructing a filtering plant, doubling the capacity of the water and light plants, purchase of an auto fire truck and for street improvement.

New Orleans, La.—A reservoir and pumping station are to be built.

Haverhill, Mass.—It has been decided to cement the bottom of Little River, to do away with the odor when the water is low in summer.

Ludlow, Mass.—An appropriation of \$1,000 for work on the highways, a hydrant and fire alarm box on Highland Ave. near Birch St., and for a hydrant on Cady St. has been requested.

Saugus, Mass.—It has been decided to purchase water meters to measure the amount of water Saugus takes from Lynn.

Constantine, Mich.—Water works are to be improved at a cost of \$10,000 to \$12,000. A. H. Smith Co., consulting engineers, 320 Nasby Bldg., Toledo, O.

Duluth, Minn.—County board are considering construction of Drainage District No. 8 at a cost of approximately \$10,000.

Hammonton, N. J.—Fire, water and light committee are considering the extension of the water system.

Perth Amboy, N. J.—George B. Gibbons & Co. have purchased \$100,000 worth of water bonds for \$101,580. The other bidders: M. Freeman & Co., \$101,188; A. B. Leach & Co., and J. S. Rippel & Co., joint bid, \$101,155; First National Bank of Perth Amboy, \$101; Charles K. Seaman, \$101; R. M. Grant & Co., \$100.98.

Yonkers, N. Y.—City bonds amounting to \$259,000, including water and fire equipment, have been purchased by Geo. B. Gibbons & Co.

Wahpeton, N. D.—The city is to install a water works and sewerage system.

Oregon City, Ore.—The water works of the city are to be extended at a cost of about \$30,000.

Columbus, O.—Bonds amounting to \$20,000 will be issued for the installation of fire hydrants.

Columbus, O.—City Council has authorized expenditure of \$6,000 for extension of water mains to Camp Willis.

Salem, O.—An ordinance to set aside from the \$50,000 bond issue a sum of \$10,000 for pipes and other expenditures necessary for proposed water mains, has been passed.

Springfield, O.—Bids have been called for by city manager on supplying 193 tons of 6-in. cast iron pipe for water main extensions. The bids are to be submitted by July 3.

Merrill, Ore.—At a special election the electors amended the city charter authorizing a bond issue of \$6,000 for the purpose of installing a water system for fire protection.

Central Falls, R. I.—\$5,000 has been appropriated for water works department.

Cranston, R. I.—Hydrants have been ordered on Sylvan Ave., Wayland Ave., Weston Ave., Cottage St.

Providence, R. I.—Entire \$1,000,000 issue of city's water supply bonds has been purchased by William A. Read & Co., of Boston.

Kingsville, Tex.—At a special election June 24 bond issue amounting to \$150,000 for purchase of water plant and improving water system, will be voted on.

Aberdeen, Wash.—A \$500,000 water system is to be built by day labor.

Hoquiam, Wash.—The water company is to construct a dam on Davis Creek, approximate cost \$75,000, also a 7-mile pipe line, approximate cost \$25,000.

Northport, Wash.—City contemplates installing a water works system at a cost of about \$25,000.

Altoona, Wis.—City is contemplating construction of water works.

Madison, Wis.—1500 feet of 30-in. cast iron pipe are to be laid, one 1,500,000 gallon reinforced concrete reservoir is to be constructed, also one small reinforced concrete suction well. L. A. Smith, superintendent of water works.

BIDS RECEIVED AND CONTRACTS AWARDED.

*Indicates Contracts Awarded.

Logansport, Ind.—The board of public works let contract for furnishing alum to city for filter plant to *Superior Chemical Co. of Joliet, Ill. Price is \$1.20 per hundred pounds and covers a period of three years. Between 25 and 30 cars of alum will be used in that time.

Middletown, O.—*J. B. Clow & Sons, for cast iron water pipe.

Tacoma, Wash.—*Lynchburg Foundry Company, for 1,600 feet of 5-inch cast iron pipe and 2,352 feet of 6-inch pipe, all class B, for \$2,622.80. This material is for Maplewood auxiliary system to furnish water to South Hill. Contract for necessary pumps will be let soon.

MISCELLANEOUS.

Caldwell, Ida.—A new motor sprinkler is to be purchased. The machine, which will be contracted for as soon as the city attorney has drawn the requisite papers, will be a 1000-gallon Federal, to cost \$4,650 in Caldwell.

Waukegan, Ill.—\$10,000 has been appropriated for purchase and installation of incinerator.

Peru, Ind.—Clerk has been authorized to call for bids for removal of garbage.

Somerset, Ky.—The Pulaski Fiscal Court has offered \$300,000 road bonds to the people of this and adjoining counties at par, bearing 4½ per cent. interest.

Escanaba, Mich.—A local firm will build the disposal plant at an estimated cost of \$30,570. Plans were made by City Engineer W. J. Hodson.

Pontiac, Mich.—Cummings, Prudden & Co., have bought bonds amounting to \$250,000.

Buffalo, N. Y.—R. W. Grant & Co., have bought the entire bond issue of \$1,300,000.

Sheridan, N. Y.—Town Board is going to purchase a machine for unloading slag from cars.

Fargo, N. D.—A new incinerating plant capable of handling ten tons of garbage a day is to be erected by the Northern Incinerator Co., Thief River Falls, Minn.

Lisbon, O.—Sealed bids will be received until 1 o'clock p. m., July 10, for bonds amounting to \$23,700 at the office of the Board of County Commissioners of Columbiana County, O., in the court house at Lisbon, O. H. R. Dickey, Clerk.

Salem, O.—Bonds amounting to \$100,000 will be issued to be used for park and playground purposes.

Philadelphia, Pa.—Application for 5,000 waste receptacles to cost about \$17,500 will be made to Councils by Director George E. Datesman, of the Department of Public Works. The receptacles, if obtained, will be placed in all sections of the city. The model favored is a metal can with uprights to keep its base about eighteen inches from the sidewalk so

that the metal will not be affected by wet weather.

Salt Lake City, Utah.—County Commission has authorized the purchase of two new sprinkling wagons.

Spokane, Wash.—The county commissioners have authorized expenditure of \$3,000 for purchase of a new heavy automobile truck. The new truck will be for use on county road work. It will be equipped with trailers for hauling great loads.

BIDS RECEIVED AND CONTRACTS AWARDED.

*Indicates Contracts Awarded.

Bridgeport, Conn.—*T. A. Scott Dredging Co., of New London, for the new Seaside Park seawall extension. The bid figure was \$141,832.90. The other bidders were as follows: Thomas O'Hern Co., New York, \$146,335; John Beattie estates, New London, \$151,319.50, and Toole & Sunderlin, this city, \$152,170.

Richmond, Ind.—*The Austin-Western Co. of Chicago, manufacturers of road machinery, for a road roller, at \$682.50.

New York, N. Y.—Bids received by Public Service Commission for supply of about 52,000 tons of structural steel for use in construction of various portions of the Dual System of rapid transit as follows: McClintick-Marshall Co., American Bridge Co. and the Pennsylvania Steel Co., all of New York City; total of low bids was \$3,675,023.90. All bids were rejected. Bids will be opened by the Public Service Commission, July 13, for the construction of Route No. 61, the new two-track tunnel from Second Ave. and 60th St., Manhattan, to a connection with new elevated lines in Queens at Queensboro Bridge Plaza station. This is the last river tunnel work to be let under the Dual System contracts. The Public Service Commission for the First District has approved the awarding by the New York Municipal Railway Corporation to Lewis H. Woods, of the contract for track-laying and electrical equipment on the Jamaica extension of the Broadway elevated line in Brooklyn from Crescent St. to Cliffside Ave. Bids were taken on four types of construction, Woods' ranging from \$136,947 to \$149,829.

Watervliet, N. Y.—*D. McCarthy, for removing city garbage, at \$3,744.

Westerly, R. I.—*Joslin-Lena Co., Pawcatuck for building a comfort station at \$539. The other bids were Charles P. Ecclestone, \$737; H. T. Kenyon and Co., \$650; R. A. Sherman's Sons Co., \$615.

TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS				
N. Y.	Albany	3 p.m., July	3..Grading, paving with asphalt, setting granite curb and laying concrete walks.....	Board of Contract and Supply.
Mass.	Beverly	7 p.m., July	3..Constructing granite and concrete steps.....	City Engineer.
Mass.	Boston	noon, July	3..Laying 21,850 sq. yds. asphalt, Topeka or bitulithic.....	E. F. Murphy, Comr. of Public Works.
N. Y.	Auburn	8 p.m., July	5..Paving with asphalt, brick or bitulithic.....	T. B. Bergan, City Engineer.
Minn.	St. Paul	10:30 a.m., July	10..Grading and curbing streets.....	H. W. Austin, Pur. Agent.
O.	Columbus	2 p.m., July	10..2.37 miles macadam; cost \$7,500.....	Clinton Cowen, State Highway Commissioner.
Ind.	South Bend	10 a.m., July	11..Paving alleys.....	Board of Public Works.
Tenn.	Murfreesboro	1 p.m., July	11..12,600 sq. yds. bituminous pavement, 4,600 ft. curb and gutter and 2,000 sq. yds. concrete sidewalk.....	B. L. Sims, Secy. Board Commissioners.
N. J.	Bayonne	1 p.m., July	11..Paving with bituminous concr., asph. and gran. and setting bluestone curbs and bluestone and concr. s'dw'k.....	City Engineer.
O.	Columbus	July	16..Constructing state road at Ironton.....	Clinton Cowen, St. Highway Commissioner.
Ind.	Jeffersonville	10 a.m., July	17..Constructing crushed stone road.....	G. W. Stoner, Auditor.
SEWERAGE				
N. Y.	Albany	3 p.m., July	3..Constr. and extending sewers and water connections....	Bd. of Contract and Supply.
N. Y.	Auburn	8 p.m., July	5..Constructing 8-in. sanitary sewer.....	T. B. Bergan, City Engineer.
Minn.	Duluth	11 a.m., July	3..Furnishing sewer materials.....	W. H. Borgen, City Clerk.
Mass.	Boston	noon, July	6..Constr. concr. conduit and pipe sewers and drains.....	E. F. Murphy, Comr. of P. W.
O.	Bowling Green	noon, July	8..Constructing sanitary sewers.....	J. E. Baird, Service Director.
Ind.	South Bend	10 a.m., July	11..Constructing pipe sewer on Bowman St.....	Board of Public Works.
Conn.	Bridgeport	7:30 p.m., July	20..9,400 ft. 60 to 72-in. sewer in 24-ft. cut.....	A. H. Terry, City Engineer.
WATER SUPPLY.				
Tenn.	Nashville	July	5..Installing water service pipe.....	Board of Commissioners.
O.	Salem	noon, July	7..Furn. 3,900 ft. 6 to 10-in. c. l. pipe.....	I. N. Russell, Dir. Pub. Serv.
Ind.	South Bend	10 a.m., July	11..Making water connections.....	Board of Public Works.
O.	Ironton	noon, July	11..Improving and enlarging waterworks by constr. pumping station, well and intake.....	John Ridgeway, Dir. Public Service.
O.	Lowellville	noon, July	15..Constr. steel stand pipe, 7 miles of distribution system, and pump house and furnishing 2 large pumps.....	William Wilson, Engr., Elks' Bldg., Youngstown, O.

STREETS AND ROADS

Miami, Fla.—Bids for laying 54,000 sq. yds. of asphalt pavement in business district have been rejected as too high and will be readvertised.

Boise, Ida.—The specifications made by Engineer Stevenson for proposed paving have been accepted and Council authorized city clerk to advertise for bids if bond election carried. The notice to bidders will ask for bids on any of the following pavements: asphalt, asphaltic concrete, bitulithic, dolarway, hassamite, plain concrete and bituminous top.

Fort Wayne, Ind.—The following named streets are to be paved and improved: Lavina from Broadway to Rockhill; Bass from Hoagland to Fairfield; Lindley Ave. from Taylor to Park View Ave.; Park View Ave. from Lindley to Broadway; Swinney Ave. from Broadway to Poenie; Carl St. from Calhoun to alley east of Calhoun; Hugh St. from Hanna to Gay; St. Joe Blvd. from McDougal to State; Old Fort St. from Columbia Ave. to St. Joe Blvd.; Purman St. from Warsaw to the alley east of Warsaw St.; Eckart from Lafayette to Warsaw; Hanna St. from Rudisill to McKinnie Ave.; Second from Harrison to Cass St.; Fry St. from Main to Boone; Garden St. from Washington Blvd to Jefferson St.; Jackson St. from Jefferson to Wilt.

Hartford City, Ind.—Jefferson St. is to be improved by paving with crushed stone, with concrete curb and gutter, cement sidewalks and a small sewer will be constructed.

Portland, Ind.—Petitions have been filed in the commissioners court asking for improvement of six miles of Redkey and Pennville pike.

Portland, Ind.—J. F. Wild & Co., Indianapolis, Ind., have purchased stone road bond issue of \$12,000.

Richmond, Ind.—Commissioners will soon advertise for bids on construction of Merton Cotey road in Green township. It is to be two miles long, made of gravel, 18 ft. wide.

Shelbyville, Ind.—The Shelbyville Street Sprinkling Association for oiling sections of West, Taylor, Mechanic and Hendricks Sts., at 4 cts. a sq. yd. It was the only bidder.

Lawrence, Kan.—Ordinances have been passed providing the grading, curbing and paving with 6-in. concrete of Illinois St. between Fourth and Fifth Sts., and New York St.

Frankfort, Ky.—Commissioner of Roads R. C. Terrell has approved contracts for improvement of 14 miles of 18th St. road in Jefferson County, four miles to be constructed of Kentucky rock asphalt and ten of macadam. The total cost to be \$22,000.

Morganfield, Ky.—Road and bridge bonds amounting to \$450,000 will be sold July 15.

Paducah, Ky.—County judge has been asked to call a special election to vote on bond issue amounting to \$400,000 for improved roads.

Yazoo City, Miss.—Commissioners are investigating the different road building materials in view of building several good roads.

Elizabeth, N. J.—Elizabeth Ave. is to be repaved from Broad to Seventh St. at a cost not to exceed \$74,042.50. Present blocks to be taken up, reclippped and relaid on a concrete foundation. Marshall St. from Seventh to First Sts. will also be paved, westerly end with granite block for 250 ft. and balance with asphaltic concrete at a cost of \$57,424.40. First St. with granite block at \$52,000. South Broad St. with granite block from Rahway Ave. to 200 ft. south of South St.; estimated cost, \$34,506, and the same street from Summer St. to Bayway at a cost of \$13,492.90. Ordinance has been passed providing for resurfacing, with asphaltic concrete, of Magnolia Ave. from First to Second Sts. Street Commissioner Neafsey was directed to advertise for bids for all the work.

Albany, N. Y.—Ordinances have been passed authorizing the improvement by paving, grading and curbing Third St. from North Lake Ave. to Quail St., Norwood Ave. between New Scotland and Woodlawn Aves., and for acquisition of land for opening of Bradford St. between Ontario St. and Portage St.

Lowville, N. Y.—C. S. Mereness, Jr., has purchased highway bonds amounting to \$10,000.

Columbus, O.—Low bidders were as follows on state road work for which bids were received June 15 by Clinton Cowen, State Highway Commissioner:

Ashland County, Section "A" of Jeromeville-Sullivan road, in Jackson township. For constructing the bridges and culverts, grading roadway and paving with bituminous macadam and reinforced concrete. Length, 3.01 miles. E. F. Downs & Co., Toledo, bituminous macadam and reinforced concrete, \$45,087.49; brick, \$46,766.90.

Ashland County, Section "F" of Ashland-Oberlin road. For constructing the bridges and culverts, grading the roadway and paving with bituminous macadam. Length, 1.45 mile. E. F. Downs & Co., Toledo, bituminous macadam, \$19,401.32; brick, \$19,247.96.

Ashland County, Section "G" of Ashland-Oberlin road. For constructing the bridges and culverts, grading roadway and paving with bituminous macadam. Length, 0.43 mile. E. F. Downs & Co., Toledo, bituminous macadam, \$5,513.72; brick, \$5,427.94.

Ashland County, Section "B" of Jeromeville-Sullivan road. For constructing the bridges and culverts, grading roadway and paving with bituminous macadam. Length, 1.37 mile. E. F. Downs & Co., Toledo, bituminous macadam, \$18,591.21; brick, \$18,180.01.

Champaign County, Section "K" of Troy-Urbana southern road. For repairing bridge over Mad River. Freea Nagel, Urbana, \$746.

Clermont County, Section "T" of Bethel-Chilo road. For constructing the bridges and culverts, grading roadway and paving with waterbound macadam. Length, 1.25 mile. The Hanlon Construction Co., Cincinnati, \$9,870.

Delaware County, Section "D" of Columbus-Wooster road. For constructing the bridges and culverts, grading roadway and paving with either tarbound macadam or asphaltbound macadam. Length, 1.80 mile. Edwards Bros., Sunbury, tarbound macadam, \$23,500; asphalted macadam, \$24,350.

Erie County, Section "O" of the Milan-Elyria road. For constructing the bridges and culverts, grading roadway and paving with waterbound macadam. Length, 2.23 miles. Huffman, Ackerman & Gillespie, Berlin Heights, \$18,133.50.

Erie County, Section "N" of Milan-Elyria road. For constructing the bridges and culverts, grading roadway and paving with waterbound macadam. Length, 0.72 mile. The Buckeye Engineering Co., Norwalk, waterbound macadam, \$9,010; concrete, the Central Construction Co., Fremont, \$9,788 (same bid).

Fairfield County, Section "A" of Lancaster-Kirkersville road. For constructing the bridges and culverts, grading roadway and paving with waterbound macadam or bituminous macadam. Length, 2.06 miles. Arthur & West, Jackson, waterbound macadam, \$21,033.40; bituminous macadam, \$28,581.05.

Fayette County, Section "K" of the Hillsboro-Washington road. For constructing the bridges and culverts, grading roadway and paving with bituminous macadam. Length, 1.87 mile. Mark & Vangundy, Washington C. H., \$17,033.94.

Fayette County, Section "A" of the Cincinnati-Zanesville road. For constructing the bridges and culverts, grading roadway and paving with bituminous macadam. Length, 7.25 miles. Mark & Vangundy, Washington C. H., \$57,479.78.

Harrison County, Section "N" of the Cadiz-Carrollton road. For constructing the bridges and culverts, grading roadway and paving with waterbound macadam. Length, 3.01 miles. J. P. Warnick, Cadiz, \$32,684.

Hocking County, Section "T" of the Chillicothe-Logan road. For constructing the bridges and culverts, grading roadway and paving with waterbound gravel. Length, 3.04 miles. E. C. Radebaugh, Logan, \$16,860.14.

Knox County, Section "J" of Columbus-Wooster road. For constructing the bridges and culverts, grading roadway and paving with waterbound macadam and reinforced concrete. Length, .94 mile. Green & Getman, Kent, \$16.40.

Logan County, Section "E" of Bellefontaine-Richwood road. For constructing the bridges and culverts, grading roadway and paving with waterbound macadam. Length, 1.32 mile. L. L. Aller, Larue, \$11,500.

Lorain County, Section "M" of Cleveland-Sandusky road. For constructing the bridges and culverts, grading roadway and paving with one of the follow-

ing types: Bituminous concrete, bituminous macadam or reinforced concrete. Length, 8.93 miles. The Public Construction Co., Elyria, bituminous concrete (tar), \$145,200; bituminous concrete (asphalt), \$146,900; The Ohio Engineering Co., Lorain, reinforced concrete, \$163,250; the Highway Construction Co., Elyria, bituminous macadam, \$113,424.

Madison County, Section "E" of the Urbana-London road. For constructing the bridges and culverts, grading roadway and paving with reinforced concrete and brick. Bids will be received for three separate contracts. Length for contract No. A, 3.07 miles; No. B, .21 mile; No. C, .21 mile. A. W. Burns, Columbus, reinforced concrete and brick; Contract No. A, \$45,994; Contract No. B, \$8,389; Contract No. C, \$3,153.

Marion County, Section "K" of Marion-Waldo road. For constructing the bridges and culverts, grading roadway and paving with waterbound macadam. Length, 3.10 miles. L. L. Aller, Larue, \$28,400.

Medina County, Section "M" Medina-Norwalk road. For constructing the bridges and culverts, grading roadway and paving with concrete. Length, 1 mile. The Kennedy-Warner Co., Medina, \$10,688.78.

Meigs County, Section "L" Pomeroy-Merrietta road. For constructing the bridges and culverts, grading roadway and paving with brick. Length, 1.13 mile. William Miller, Gallipolis, \$22,564.

Meigs County, Section "M" or the Middleport-McArthur road. For constructing the bridges and culverts, grading roadway and paving with reinforced concrete. Length, 1.33 mile. Mumwa & Ross, Huntington, W. Va., \$20,906.

Montgomery County, Section "L" of the Dayton-Indianapolis road. For constructing the bridges and culverts, grading roadway and paving with brick. Length, 2.01 miles. D. A. Onkst & Son, Dayton, \$45,581.

Montgomery County, Section "H" of Dayton-Greenville road. For constructing the bridges and culverts, grading roadway and paving with brick. Length, 1.44 mile. Clifton Hoolihan, Dayton, \$30,941.

Montgomery County, Section "T" Dayton-Covington road. For constructing the bridges and culverts, grading roadway and paving with brick. Length, 1.59 mile. D. A. Onkst & Son, Dayton, \$41,605.

Morgan County, Section "G" McConnellsville-Athens road. For constructing the bridges and culverts, grading roadway and paving with waterbound macadam. Length, 2.37 miles. Curtis & Thoenen, Greenville, \$31,243.31.

Muskingum County, Section "K" of the Zanesville-Cincinnati road. For constructing the bridges and culverts, grading roadway and paving with bituminous macadam. Length, 1.45 mile. The J. A. Swingle Construction Co., Zanesville, \$17,295.62.

Perry County, Section "Q" of the New Lexington-Athens road. For constructing the bridges and culverts, grading roadway and paving with reinforced concrete. Length, 4.26 miles. The H. C. Foster & Son, Richmond, Ind., reinforced concrete, \$98,200; brick, \$88,800.

Portage County, Section "R" of the Cleveland-Kent road. For constructing the bridges and culverts, grading roadway and paving with plain concrete. Length, 2.63 miles. S. S. Senter, Canton, \$27,461.35.

Seneca County, Section "A" of Fremont-Tiffin road. For constructing the bridges and culverts, grading roadway and paving with waterbound macadam. Length, 4.37 miles. B. D. Knepper, Tiffin, waterbound macadam, \$39,996.63; bituminous macadam, \$50,916.63.

Shelby County, Section "D" of Sidney-Wapakoneta road. For constructing the bridges and culverts, grading roadways and paving with waterbound macadam. Length, 3.75 miles. Sousley & Botkins, Ada, \$35,422.72.

Wyandot County, Section "A" of the Kenton-Upper Sandusky road. For constructing the bridges and culverts, grading roadway and paving with brick. The Modern Construction Co., Fremont, \$21,940.

Franklin County, Sections "A & L" of the Columbus-Marysville road. For repairing and extending the bridges and culverts, grading and shaping roadway, resurfacing with bituminous macadam (alternative bid for solid, natural lake asphalt). Length, 2.87 miles. P. J.

Conley, Columbus, bituminous macadam, \$20,962.46; solid natural lake asphalt, \$22,951.69.

Lucas County, Section "A" of the Toledo-Elmore road. For patching holes and applying bituminous surface treatment. Length, 1.13 mile. The Barrett Co., Cleveland, \$3,134.70.

Lucas County, Sections "A," "B" and "C" of the Toledo-Lancing road. For patching, applying surface treatment to all but .75 mile and surfacing with bituminous macadam to .75 mile. Length, 6.03 miles. Doan & Langendorfer, Toledo, \$6,345.44.

Lucas County, Sections "A" and "B" of the Holland-Sylvania road. For surfacing with bituminous treatment. Length, 3.74 miles. The Barrett Co., Cleveland, \$1,854.28.

Lucas County, Section "A" of the Toledo-Ann Arbor road. For patching and applying surface treatment. Length, 2.66 miles. The Barrett Co., Cleveland, \$1,712.62.

Portage County, Section "A" of the Aurora-Warren road. For constructing the bridges and culverts, grading roadway and resurfacing with bituminous macadam. Length, 2.6 miles. Wright & Chessel, Kent, \$23,263.33.

Wayne County, Section "A" of the Cleveland-Wooster road. For constructing the bridges and culverts, grading roadway, widening to 16 feet and resurfacing with bituminous macadam. Length, 1.03 mile. The J. C. Devine Co., Alliance, \$8,398.64.

Johnstown, Pa.—All bids for paving brick and reinforced concrete in West Taylor township have been rejected.

Sumter, S. C.—City Council have decided to pave Broad St. from Church St. to city limits with bitulithic pavement.

Knoxville, Tenn.—Ordinances have been passed providing for paving Luttrell St. from Wells to Grainger Aves., and Lovenia St. from Broadway to Gratz Ave. Bids on the construction of these pavements will be advertised for at once.

Norfolk, Va.—The sum of \$21,000 is to be spent in improvement of streets and sidewalks.

Portsmouth, Va.—The schedule for laying the new sidewalks includes the following streets for the present: Broad St., Maryland Ave., the boulevard and Douglas Ave., and First, Second and Third Sts. On some of those thoroughfares at present there are sidewalks laid on one side, so the work will be carried forward now on side of street that has no walkways.

Richmond, Va.—Curbing and water connections have been asked for Moody Ave., between 33d and 35th Sts., and for gravel for Maury St., between the turnpike and 19th St., and on 24th St., between Semmes and Perry, and 32d, between Semmes and Stonewall.

Charleston, W. Va.—Bonds amounting to \$800,000 will be issued for building 75 miles of road in Brooke County.

Indianapolis, Ind.—A gravel road in Lost Creek township, Vigo County, will be constructed by Jordan W. Creasey & Son, of Terre Haute, Ind., for \$12,884.

Muncie, Ind.—Equitable Asphalt Maintenance Co., Kansas City, Mo., for resurfacing Monroe St. from High to Mulberry St.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates contracts awarded).

Muscantine, Ia.—Korneman & Smith, Muscantine, bid 40 cts. on extra grading, 70 cts. on combined concrete curb and gutter, and 65 cts. on a one-mix curb. They bid \$1.82 on vitrified block brick, \$1.86 on block brick pavement with asphalt filler, \$1.86 on the same with pitch filler, and \$1.79 on block brick pavement with cement grout filler. The firm offered \$1.65 and \$1.81 on asphaltic concrete paving. A certified check for \$4,250 accompanied this bid. Fuller Bros. & Co., Muscantine, presented the following bids: Extra grading, 40 cts.; concrete combined curb and gutter, 55 cts.; vitrified block brick, \$1.85; one-course concrete paving, 6 ins. thick, \$1; for street railway right of way, 11-in. concrete base and 4 ins. of vitrified brick, including sub-grade, \$5. The bid of Ford Paving Co., Cedar Rapids, which was accompanied by a certified check for \$5,000, was as follows on principal items, its general range being among the lowest: Bitulithic paving, \$1.83 per sq. yd.; vit-

rified block brick, 5-in. concrete base, \$1.90; same with 4-in. base, \$1.82; block brick pavement with either asphalt or pitch filler, \$1.82; same with grout filler, \$1.90; vitrified fibre pavement with asphalt filler, \$1.92; monolithic brick block with asphalt filler, \$2; asphaltic concrete, \$1.51; asphalt pavement with 5-in. concrete base and 2 ins. of asphalt wearing surface, \$1.82; street car right of way improvement, \$3.12. Other firms bid from \$4.50 to \$5 on the latter work. The Ford Co. bid \$1.25 on resurfacing brick with asphalt on Sycamore St. Wm. Horrabin, of Iowa City, bid 45 cts. on extra grading, 67 cts. on combined concrete curb and gutter, \$1.99 for bitulithic paving, \$2.10 for block brick paving with asphalt filler and \$1.73 asphaltic concrete paving. His bid was accompanied by a \$5,000 certified check. The fifth bid was received from the Asphaltic Paving Co., of Des Moines. The company presented a certified check for \$5,500 with its bid. *George Maurer, of Muscantine, for building cement sidewalks ordered by city, at 10½ cts. per sq. ft. The single other bid was H. J. Jeffries at 10½ cts. per sq. ft. For grading Longview Park, *James Nordquist, of Muscantine, at 16 cts. per sq. yd. for removing earth. For this same work, O. W. Hintermeister presented a bid of 20 cts. per sq. yd., and Fuller Bros. & Co., 23 cts.

Shelbyville, Ind.—*Edward Mings, for Polk St. improvements planned because of hitch-racks in south side of street along court house park, his bid being \$1,111.03. The estimate of the cost, engineer's estimate, was \$1,166.22. Mr. Mings was also given the contract for Pike St. cement walks and Third St. cement curbs and gutters, bid on former being 64½ cts. a ft., and on latter 54½ cts. a ft. Raymond Peters was only other bidder. He was slightly higher than Mr. Mings in his figures on each of the three proposed improvements.

South Bend, Ind.—*W. E. Brady Construction Co., for paving Mishawaka Ave. and Eddy St. from Jefferson Blvd to 19th St.

Padenah, Ky.—The Ballard Fiscal Court has awarded contracts for construction of 16.48 miles of state aid roads after rejecting bids for 36 miles because the magistrates deemed them too high. There were six bids offered. The court will readvertise for bids to be opened July 3. The contracts let were 5.06 miles Bandana and Oscar road, *Jean Scamahorn for \$11,684.22; for 4.22 miles Hinkleville and La Center road, *Fraser & West Kentucky Construction Co., for \$9,498.72; for 7.2 miles Wickliffe, Slater and Hinkleville road, *Armstrong & Grubbs, for \$17,821.51.

Boston, Mass.—*W. J. Kelly Co., for construction artificial stone sidewalks in the public streets.

Brooklyn, N. Y.—Bids received for paving 2,440 sq. yds. sheet asphalt pavement, 6-in. concrete base, Cranford Co., \$2.01 per sq. yd.; excavation, 85 cts. per sq. yd. Uvalde Asphalt Paving Co., \$2.10 per sq. yd.; excavation, 90 cts. per sq. yd. Boro Asphalt Co., \$2.20 per sq. yd.; excavation, \$1 per sq. yd. For paving 19,000 sq. yds.: Brooklyn Alcatraz Asphalt Co., \$2.14 per sq. yd.

Little Falls, N. Y.—There were only two bids received for paving West Monroe St. and Furnace St. These were from R. D. Cooper, the local contractor, and Warren Bros. The former bid only on Monroe St., the latter bid on both. Mr. Cooper's bid was \$26,940.20 and the Warren bid was \$25,218. The Warren bid on Furnace St. was in two classes. The first was \$8,699.70 with a Mack Corning brick and \$8,757 for an Olean bessemer brick.

New Brighton, N. Y.—Bids received for paving 2,650 sq. yds. bituminous concrete on 6-in. concrete foundation: Uvalde Asphalt Paving Co., 92 cts. per sq. yd.; Sicilian Asphalt Paving Co., \$1.25 per sq. yd.

Rockville Center, N. Y.—Bids received on paving 2,664 sq. yds. concrete: Rosenthal Engineering Contracting Co., Inc., Brooklyn, N. Y., at \$1.44 per sq. yd.

Yonkers, N. Y.—On the permanent paving, regulating and grading of North Broadway from Ashburton Ave. to No. 919, there were three bidders whose figures were referred to office of the corporation counsel. The class of paving will be designated by common council. The first bid opened was that of the O'Rourke Contracting Co., asphalt block, for \$156,790. James J. Hart, sheet asphalt, for \$156,478.85. Warren Bros. made three bids on bitulithic. If put on the

old macadam road, \$106,334.08; if on a concrete base, \$139,502.48, and if on a bituminous base, \$128,568.28. All bids provide for 35,848 yds. of asphalt block and 11,803 yds. of granite block. *James A. Kellock Cut Stone Co., for curbing, guttering and sidewalk Hyatt Ave. from McLean Ave. to Wakefield Ave., at \$9,552.95. The other bidders were: Hanifin Contracting Co., \$10,508.85; Thomas Grady, \$9,829.52; O'Rourke Contracting Co., \$10,435.54; James J. Corbally, \$9,994; Frank J. Kelly, \$10,658; Frank Cianfaglione, \$10,500; Joseph De Marco, \$12,494. *The Kellock Co., for curbing, guttering and sidewalk First St., at \$10,166.36. The other bidders were: Hanafin Contracting Co., \$10,998; Thomas Grady, \$10,330.16; O'Rourke Contracting Co., \$11,123.22; James J. Corbally, \$10,587.58; Frank J. Kelly, \$10,994; Frank Cianfaglione, \$11,700.

Lorain, O.—The Ohio Engineering Co. of this city was the only bidder with a bid for building the Lake Shore highway between Lorain and the Cuyahoga county line with a reinforced concrete pavement. The local company's bid was \$163,250. The Public Contracting Co. of Elyria bid \$145,200 on a bituminous concrete pavement, concrete road with tar top. It also bid \$146,900 for a concrete highway with asphalt top. The Highway Construction Co. of Elyria bid was \$113,424 for a bituminous macadam road. All bids included grading, paving and the construction of bridges and culverts.

Cresson, Pa.—*Gregory Paving Co., Lewistown, Pa., for paving 18,200 sq. yds. vitrified brick, 6-in. concrete foundation, at \$2.18 per sq. yd.

Chippewa Falls, Wis.—*Herman Schroetter, for grading Gough road.

Racine, Wis.—*John Griffith, for construction of about a mile of Corliss road at \$8,288.43. The Caledonia road, nearly 2 miles of concrete pavement, to *Christ Nelson, at \$15,008.54.

SEWERAGE

Logansport, Ind.—Plans and specifications for sewer in Douglas St. between 15th and 17th and extension on 15th St. south to connect with Miles St. sewer have been adopted by board.

Shelbyville, Ind.—The engineer's estimate on the cost of Montgomery St. storm sewer was \$1,388.90. This has been approved by the Council and plans and specifications for work were adopted and the clerk has been ordered to advertise for bids.

Albany, N. Y.—After repeated efforts the residents of Grove St. succeeded in having a resolution put through the Council authorizing a sewer for that street. The city clerk has been directed to advertise for bids for the improvement of First St. from McNaughton to Fowler Ave. An overflow sewer has been ordered built at East St. and Second Ave. Petitions to have Washington St. from the Creek St. bridge to Herrick St., and Fourth Ave., from Broadway to Washington St., paved have been received from residents of those streets.

Albany, N. Y.—Ordinances have been passed authorizing the laying of sewers in Lark St. from Van Woert St., southerly 350 ft., and Grand Ave. from Third St. northerly.

Westerly, R. I.—Town Council has voted for the construction of sewer system to cost approximately \$200,000.

Burlington, Vt.—A sewer has been ordered in Pine St. from Marble Ave. to Howard St. by the board.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates contracts awarded).

Miami, Fla.—*J. P. Little, West Palm Beach, for construction of storm sewers at \$29,163.

Boston, Mass.—Antony Cefalo, at \$6,332.40, for pipe sewers and drains in Tremont entrance, southeast side, Roxbury. Other bidders were: Anthony Baruffaldi, \$6,567.82; John P. McCarthy, \$6,813.40; Thomas Russo & Co., \$7,912.85; Vincenzo Grande, \$10,130.65; Frank Drinkwater, \$10,272.50; George J. Regan, \$11,297.35. George J. Regan, at \$3,103.70, for pipe sewers and drains in Harvest and Train Sts., Dorchester and Rutledge road, Hyde Park. Other bidders were: M. DeSisto, \$3,309.25; Anthony Baruffaldi, \$3,546.95; Daddario & Booth, \$4,022.95; J. H. Ferguson, \$4,177.40; V. Grande, \$4,358.50; Frank Drinkwater, \$5,767.50.

OFFICE OF THE STATE COMMISSION OF HIGHWAYS

ALBANY, N. Y.

Sealed proposals will be received by the undersigned at their office, No. 55 Lancaster Street, Albany, N. Y., at 1 o'clock P. M., on Monday, the 10th day of July, 1916, for the construction of highways in the following counties:

Albany (two highways—0.17 and 0.88).
Cattaraugus (approx. 4.73).
Cayuga (approx. 4.39).
Chautauqua (approx. 4.33).
Chemung (approx. 4.14).
Chenango (approx. 7.09).
Clinton (approx. 10.46).
Dutchess (approx. 0.56).
Essex (approx. 1.76).
Fulton (approx. 5.13).
Greene (approx. 2.39).
Herkimer (approx. 5.10).
Madison (approx. 6.54).
Monroe (approx. 2.92).
Nassau (approx. 5.24).
Oneida (approx. 6.15).
Otsego (approx. 8.13).
Saratoga (approx. 6.10).
Wayne (approx. 3.67).
Westchester (approx. 1.74).

ALSO FOR THE REPAIR OF THE FOLLOWING:

Erie (one contract—surface treatment).
Fulton (one contract—resurfacing).
Nassau (one contract—resurfacing).
St. Lawrence (one contract—resurfacing).
Ulster (one contract—resurfacing).

Sealed proposals will also be received at 1 o'clock P. M., on Wednesday, the 12th day of July, 1916, for the construction of the following highways.

Albany (two highways—3.23 and 5.62).
Cattaraugus (approx. 2.17).
Cayuga (approx. 3.89).
Chautauqua (approx. 0.74).
Chenango (approx. 2.91).
Essex (approx. 4.95).
Fulton (two highways—2.90 and 1.10).
Genesee (approx. 7.60).
Madison (approx. 5.65).
Monroe (approx. 7.93).
Nassau (approx. 3.09).
Oneida (approx. 5.74).
Oswego (approx. 0.36).
St. Lawrence (two highways—0.44 and 4.60).
Steuben (approx. 5.76).
Wayne (two highways—3.97 and 2.25).

ALSO FOR THE REPAIR OF THE FOLLOWING:

Dutchess (one contract—resurfacing).
Erie (one contract—resurfacing).
Monroe (one contract—resurfacing).
Niagara (one contract—resurfacing).
Westchester (one contract—resurfacing).

Sealed proposals will also be received at 1 o'clock P. M., on Friday, the 14th day of July, 1916, for the construction of the following highways:

Albany (approx. 2.93).
Chautauqua (two highways—5.65 and 3.90).
Chenango (approx. 0.82).
Fulton (two highways—2.80 and 3.74).
Genesee (approx. 7.94).
Herkimer (approx. 5.67).
Madison (approx. 0.91).
Monroe (two highways—3.69 and 5.27).
Nassau (approx. 3.38).
Niagara (approx. 2.38).
Onondaga (approx. 5.55).
Oswego (approx. 2.04).
Otsego (approx. 7.87).
St. Lawrence (approx. 11.16).
Ulster (approx. 2.73).
Wayne (two highways—1.88 and 6.41).
Westchester (approx. 2.74).

ALSO FOR THE REPAIR OF THE FOLLOWING:

TARCO Single and Double Diaphragm TRENCH PUMP

Capacity of Double Pump, 7,500 to 8,000 gallons per hour. Single Pump, 3,500 to 3,800.

NO BATTERIES are used. It is equipped with 1¼ H. P. Water Cooled Gasoline Engine and direct geared oil and waterproof Magneto.

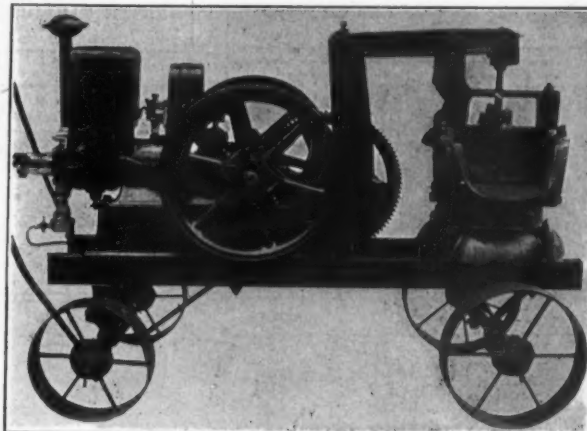
Our engine will operate under severe conditions that would be impossible with those using batteries.

Buy a Tarco and do the work of 8 or 10 laborers at a cost of 50 to 75 cents a day. For prices and terms, write.

We also manufacture a full line of heating kettles and other road oiling appliances.

TARRANT MANUFACTURING CO.

Saratoga Springs, N. Y.



Cattaraugus (one contract—resurfacing and surface treatment).

Delaware (one contract—surface treatment).

Erie (one contract—resurfacing).

Nassau (one contract—resurfacing).

Maps, plans, specifications and estimates may be seen and proposal forms obtained at the office of the Commission in Albany, N. Y., and also at the office of the Division Engineers in whose division the roads are to be improved. The addresses of the division engineers and the counties in which they are in charge will be furnished on request.

The especial attention of bidders is called to "GENERAL INFORMATION OF BIDDERS" on the itemized proposal, specifications and contract agreement.

EDWIN DUFFEY,
Commissioner.

I. J. MORRIS,
Secretary.

NOTICE TO PAVING CONTRACTORS

Sealed proposals will be received until 12:00 noon, Wednesday, July the 12th, 1916, at the Mayor's Office, Dyersburg, Tennessee, for the paving of various streets in the City. The approximate estimate being:—

3,260 Square Yards of one course concrete paving.

27,550 Square Yards on which bids will be solicited for Asphaltic Concrete, Vitriified Brick, Wood Block Sheet Asphalt and Tar Macadam, all on four or five inch Concrete base.

30,000 Lineal Feet of either concrete combination curb and gutter or granite curb with concrete gutter.

9,000 Cubic Yards excavation, together with catch basins, valve chambers, storm sewer, etc., incidental thereto.

Proposal blanks can be had upon application to the Mayor of Dyersburg, Tennessee.

A deposit of ten per cent. of the amount of the bid must accompany the proposal.

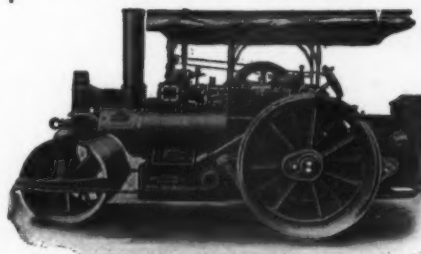
Right reserved to reject any and all bids.

(Signed) L. E. CARNE, Mayor.

TREASURY DEPARTMENT, Supervising Architect's Office, Washington, D. C., June 20, 1916.—Sealed proposals will be opened in this office at 3 p. m., August 2, 1916, for the construction complete (including equipment) of three interior safety vaults, of reinforced concrete, in the United States customhouse, New Orleans, La. Drawings and specifications may be obtained from the superintendent of construction at the customhouse, New Orleans, La., or at this office, in the discretion of the Supervising Architect. Jas. A. Wetmore, Acting Supervising Architect.

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SUMMIT ENGINEERING & CONTRACTING CO.

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RENNELL CONSTRUCTION COMPANY

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GALVANIZED
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ALL PURPOSES

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1—Steam Roller, Excellent Condition.
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FOR SALE

Two 10-ton gasoline macadam rollers. Slightly used. Attractive prices. Write—Bailey & Baynard, c/o the Municipal Journal.

WANTED

One 10-ton macadam roller at a reasonable price. Send lowest cash price and description to Lewis Jameson, c/o the Municipal Journal.

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RENTED OR SOLD
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Asphalt Plant
No. 22 Koehring Concrete Mixer
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16—80,000 capacity, all steel. Have closed tops. Capacity 10,000 gallons. Good as new—low price. M. C. B. condition.

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NOTICE TO CONTRACTORS

Bids will be received by the City of Harrisburg, Va., for constructing vitrified Block and Asphalt Block pavement until noon, July 5, 1916. Approximate quantity 18,000 square yards.

Specifications and blank forms from City Clerk. City reserves right to reject any or all bids.

E. A. ZIGLER,
Chairman Street Committee.

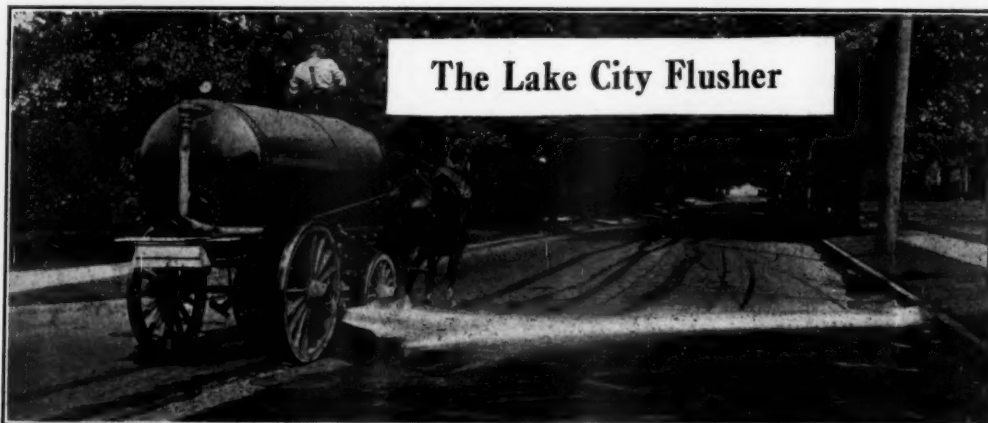
WATER WORKS AND POWER EQUIPMENT

The City of Wahoo will receive bids up till 2 o'clock, July 26, for the purchase of the following machinery:

1—225 H.P. either Simple or Tandem Compound Corliss Engine. Or 1—225 H.P. Uniflow Engine, same to be direct connected to a 150 K.V.A., 2300 V. Generator, exciter, switchboards, 25 H.P. Motor and a Triplex Pump.

Specifications are on file in the office of the Water and Light Commissioner, City of Wahoo.
H. M. ROBERTSON,
Superintendent.

Sealed bids will be received up to 5 P. M. of July 6th for the reconstruction of small dam (300 feet long, 10 feet high) belonging to the Walden Knife Co., at Walden, N. Y. Plans and specifications may be seen at the office of the Engineer, 43-45 Second Street, Newburgh, N. Y. Alex. Thomson, Jr., Consulting Engineer.



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